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JANUARY 1988

ICHTHYOPLANKTON AND STATION DATA FOR CALIFORNIA COOPERATIVE OCEANIC FISHERIES INVESTIGATIONS SURVEY CRUISES IN 1969

Elizabeth G. Stevens Richard L. Charter H. Geoffrey Moser Larry R. Zins

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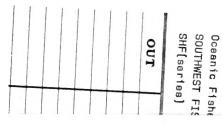
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ABSTRACT

This report provides ichthyoplankton and associated station tow data from California Cooperative Oceanic Fisheries Investigations (CalCOFI) cruises conducted off California and Baja California in 1969. It is the nineteenth report in a series that presents these data for all biological-oceanographic CalCOFI surveys from 1951 to the present. A total of 1724 stations was occupied during 10 monthly multivessel cruises over the survey area which extended from the California-Oregon border to Pt. San Juanico, Mexico, and seaward to several hundred miles. The data are listed in a series of 6 tables; the background, methodology, and information necessary for interpretation and quantitative analysis of the data are presented in an accompanying text. pertinent station and tow data, including volumes of water strained and standard haul factors, are listed in the first Another key table lists, by station and month, standardized counts of each of the 153 larval fish categories identified from survey samples. This and previous and subsequent reports make the CalCOFI ichthyoplankton and station data available to all investigators and serve as guides to the newly developed computer data base.

INTRODUCTION

report, the nineteenth of a series, provides ichthyoplankton and associated station and tow data from California Cooperative Oceanic Fisheries Investigations (CalCOFI) joint biological-oceanographic survey cruises conducted in 1969. This program was initiated in 1949, under the sponsorship of the Marine Research Committee of the State of California, to study the population fluctuations of the Pacific sardine (Sardinops sagax) and the environmental factors that may play a role in such fluctuations. CalCOFI, known as the California Cooperative Sardine Research Program from 1949 to 1953, was made up of representatives of the South Pacific Fisheries Investigations (SPFI) of the U.S. Fish and Wildlife Service [now the La Jolla National Marine Fisheries Service (NMFS)], the Laboratory, Scripps Institution of Oceanography (SIO), the California Department of Fish and Game (CDFG), the California Academy of Sciences (CAS) and the Hopkins Marine Station of Stanford University. The first three of these agencies supplied ships and personnel to conduct the sea surveys. NMFS processed the plankton samples and analyzed the ichthyoplankton from them. SIO processed and analyzed the hydrographic samples and measurements and also analyzed invertebrate groups from the plankton samples.

The boundaries, station placement, and sampling frequency for the CalCOFI survey area were based on the results of joint biological and oceanographic cruises conducted by NMFS and SIO during 1939-41. Those cruises were designed to collect sardine eggs and larvae and associated hydrographic data over the entire areal and seasonal spawning range of the species. On these survey cruises, plankton tows were made to 70 m, a depth which

encompassed the vertical distribution of sardine eggs and larvae. Wide-ranging joint biological and oceanographic survey cruises were resumed in 1949 with sardine as the focus; however, an increasing interest in other biological components resulted in the deepening of standard tows to 140 m in 1951. This marked the beginning of truly quantitative ichthyoplankton sampling on CalCOFI surveys.

Data resulting from CalCOFI surveys in 1969 have been published in a number of forms. Hydrographic data (Univ. of Calif., SIO, 1976, 1977, 1979, 1980) and zooplankton volumes (Smith, 1974) were presented in standard formats. Distributional maps of larvae of 2 taxa taken on CalCOFI surveys during 1969 are presented in the CalCOFI atlas series: rockfish (Sebastes spp.), Ahlstrom et al., 1978; and northern anchovy (Engraulis mordax), Hewitt, 1980.

A computer data base for eggs and larvae of sardine anchovy, for larvae of Pacific hake (Merluccius productus), jack mackerel (Trachurus symmetricus) and Pacific mackerel (Scomber japonicus), and for eggs of Pacific saury (Cololabis saira) was established in 1969. The development of a data base for other larvae is a complex undertaking because competency of identification has evolved steadily over the past 38 years. We began the task of producing a CalCOFI ichthyoplankton data base and associated data report series in 1983. All available original records for 1969 were subjected to an extensive verification and editing process to produce this report. This and previous (Ambrose et al., 1987a,b,c; 1988a,b; Sandknop et al., 1987a,b; 1988a,b,c; Stevens et al., 1987a,b,c; 1988; Sumida et al., 1987a,b; 1988a, b) and subsequent reports make the CalCOFI ichthyoplankton and station data available to all investigators and serve as guides to the computer data base. data base will be modified when additional errors are discovered and when composite taxa from the earlier years are reidentified. These reports are the fundamental reference documents against which subsequent changes in the data base can be compared.

SAMPLING AREA AND PATTERN

In 1969, CalCOFI survey cruises were conducted at monthly intervals, except for March and November. A total of 1724 stations included in this data base was occupied on 10 cruises, with an average of 172 stations per cruise (range 93-315). Coverage of the survey station pattern varied among cruises and the entire survey area was not covered on any single cruise (Figures 1-13, Table 1). The area off northern California (lines 40-57) was covered on only one cruise (February). Coverage off central California (lines 60-77) was more consistent with all major lines occupied in January, February, May, July, August, October, and December. The area between Pt. Conception, California, and Pt. San Juanico, Baja California (lines 80-137) was occupied on cruises in February, April, July, October and December; southerly coverage of this region stopped at Sebastian

Vizcaino Bay (line 120) in January and at San Diego (line 93) in May and August. The June and September cruises covered northern and central Baja California (lines 97-137). The area off southern Baja California (lines 140-157) was not surveyed in 1969. Typically, coverage did not extend beyond station 90 (approximately 160-260 miles offshore); however, coverage extended seaward to station 140 (approximately 400-500 miles offshore) on lines 90 and 93 in January, April, July and October; and to station 120 (approximately 270-360 miles offshore) on all lines from 40 through 77 in February Some inshore stations were occupied in 1969 which were not covered on early CalCOFI surveys. These stations were included in the data base (Table 1) but were omitted from the station plots (Figures 2-13).

Three vessels were employed on these cruises: the *David Starr Jordan* and *Miller Freeman* of NMFS, and the *Alexander Agassiz* of SIO. One to three vessels participated on each cruise with two being the average number. The *Alexander Agassiz* was used on 8 cruises, the *David Starr Jordan* on 7 and the *Miller Freeman* on 1 (Univ. of Calif., SIO, 1976, 1977, 1979, 1980).

After 1969, CalCOFI surveys were made on a triennial basis. These began in 1972 and continued every 3 years (1975, 1978, 1981, 1984) until 1985 when annual surveys were resumed.

SAMPLING GEAR AND METHODS

In 1969, changes were made in both the gear and the method used to collect CalCOFI ichthyoplankton samples (Smith, 1974). The net material of the standard 1-m diameter ring net was changed from silk bolting cloth to 0.505 mm nylon mesh throughout; the cod end was constructed of 0.333 mm nylon mesh (P. E. Smith, pers. comm.). The 1-m net was mounted on a frame which also held a 1/2-m ring net constructed of 0.333 mm nylon mesh throughout (see Fig. 6 in Kramer et al., 1972). The frame was fastened to a short 3-lead bridle connected to several meters of line which attached to the towing cable by a clamp. A current meter was suspended in the center of the mouth of each

¹ CalCOFI lines (Figure 14) are arranged perpendicular to the coastline and extend from the Canadian border (line 10) to below Cape San Lucas, Baja California (line 157). Stations were established on the basis of a perpendicular to line 80 (off Pt. Conception) at a point designated as station 60. Stations were plotted seaward and shoreward from station 60 on each line. Cardinal CalCOFI lines (those ending in "0") are 120 miles apart and usually bracket two ordinal lines (ending in "3" or "7"), so that lines are 40 miles apart over most of the pattern. Cardinal stations are 40 miles apart and typically these are separated by a station number ending in "5" so that stations are 20 miles apart out to station 90 on most lines. Stations are placed at closer intervals near the coast and islands to accommodate these features (see Kramer et al., 1972 for further details).

net to measure volume of water filtered (see Kramer et al., 1972, for further details). The 2-net array was used only in 1969. The single 1-m ring net with 0.505 mm nylon mesh was used on the next two surveys (1972, 1975) and was replaced by the Bongo net in 1978.

The standard tow in 1969 was an oblique haul to 200 m depth (to 15 m of the bottom in shallow areas) designed to filter a constant amount of water per depth interval (ca. 3m3/m of depth) over the vertical range of most ichthyoplankters. were made at a ship speed of 1.5-2.0 knots and initiated by clamping the net line to the towing cable with the 45 kg terminal weight about 10-15 m below the surface. The net was lowered to 200 m depth by paying out 300 m of wire over a 6 minute period (33 m of depth/min.). After fishing at depth for 30 seconds, the net was retrieved at 20 m/min. (14 m depth/min.). The angle of stray of the towing cable was recorded every 30 seconds and maintained at 45° (+3°) by adjusting the ship speed and course. After reaching the surface, the net was washed down and the samples preserved in 5% formalin buffered with sodium borate. Flowmeter readings were made at the beginning and end of each Detailed descriptions of gear and methods are given by Kramer et al. (1972), and Smith and Richardson (1977).

LABORATORY PROCEDURES

Laboratory processing began with the determination of a displacement volume for each sample (methods described in Staff, SPFI, 1953 and Kramer et al., 1972). Zooplankton volumes (including ichthyoplankton) of samples collected in 1969 are presented graphically in Smith (1974).

Sorting involved the removal of ichthyoplankton from the sample and identification and separation of: eggs and larvae of Pacific sardine and northern anchovy; larvae of Pacific hake; and eggs of Pacific saury. Each sample was sorted completely; no samples were fractioned in 1969.

A "standard haul factor" (SHF) was calculated for each tow to make them comparable and allow estimations of areal abundance. This factor adjusts the number of eggs or larvae in a haul to the number in 10 m³ of water strained per meter of depth fished. If the vertical distribution of the species has been encompassed, then the adjusted value is equivalent to the number under 10 m² of sea surface. The SHF is calculated for each haul by the formula:

$$SHF = \frac{10 D}{V}$$

V = total volume of water (m³) strained during the haul

 $V = R \cdot a \cdot p$

where R = total number of revolutions of the current meter during the haul

 $a = area (m^2)$ of the mouth of the net

p = length of column of water (m) needed to
 produce one revolution of the current
 meter.

Tow depth, volume of water strained, and standard haul factor are listed in Table 1 for each tow taken during 1969. Detailed descriptions of factors involved in calculating these values are presented in Ahlstrom (1948), Kramer et al. (1972), and Smith and Richardson (1977).

IDENTIFICATION

Identification of ichthyoplankton species beyond separated during the sorting process was carried out by a separate group of specialists. Ontogenetic stages of fishes are inherently difficult to identify and this is further complicated the large number and diversity of species which contribute to by the ichthyoplankton of the California Current region. identifications were accomplished by establishing ontogenetic series on the basis of morphology, meristics, and pigmentation and then identifying these series by relating them to known metamorphic, juvenile, or adult stages with overlapping features (Powles and Markle, 1984). A total of 151 taxa was identified for 1969, with 87 taken to species, 29 to genus, 29 to family, and 6 to order or suborder. Beginning in 1961, larvae in families Paralepididae and Labridae were identified to genus or In 1969, larvae of the mirapinnatoid family species. Eutaeniophoridae and two species of myctophids, Parvilux ingens and Protomyctophum thompsoni, were identified for the first time.

The task of producing a reliable and equitable ichthyoplankton data base required extensive procedures to verify, correct, and edit the original identifications. The primary data source was the original identification sheets (see Kramer et al., 1972, for examples); however, a critical resource used in all phases of this process was the CalCOFI ichthyoplankton collection in which the samples are archived. Throughout the course of CalCOFI ichthyoplankton studies, samples have been identified to the lowest taxon possible. In reviewing these identifications for the data base, our approach has been conservative and we have preserved those identifications and counts which we could confirm, while correcting as many of the errors as possible. After computer entry, taxonomic errors and inconsistencies in the data base were corrected and the most

obvious identification errors were corrected. Our current knowledge of ichthyoplankton techniques coupled with a precise understanding of the development of identification competency in the program over the years allowed us to critically judge the historical records. Identifications were changed to different taxa, lumped to a higher taxonomic category, or given a more precise taxonomic name. In some cases, identifications of a taxon were inconsistent among cruises in a year. These records were made equitable by lumping to the higher taxonomic category to avoid biases that could result in quantitative misinterpretation.

Next, statistical, seasonal, and geographic outliers were identified, employing a series of graphic summaries and listings. Examination of geographic outliers proved to be especially effective because of our accumulated knowledge of species distributions. In the course of examining samples for these outliers, other identification errors were discovered and eventually all taxa were scrutinized to some extent. Lastly, certain taxa were reexamined in all samples for the entire CalCOFI time series. These taxa were selected because of their commercial, ecological, phylogenetic, or zoogeographic importance or because taxonomic confusion was at the ordinal level. The following is a list of the taxa for 1969 which received special attention, with explanations and caveats intended to aid in quantitative interpretations:

- Anguilliformes tentative and sporadic identifications to family or lower taxon lumped to order.
- Sardinops sagax all specimens south of line 120 checked for misidentification of Opisthonema spp.
- Engraulis mordax some nearshore samples of small E. mordax may contain other anchovy genera which could not be differentiated.
- Bathylagus spp. includes small and/or disintegrated specimens of Bathylagus or Leuroglossus stilbius.
- Bathylagus milleri all specimens checked.
- Osmeridae specimen checked.
- Stomiiformes all specimens checked and identified to genus or species; residuals are small, poorly preserved or unavailable specimens.
- Vinciguerria lucetia specimens taken seaward of station 100 checked for misidentification of V. poweriae; some V. poweriae may remain in these samples because small larvae

- of the two species could not be differentiated; sporadic identification of *V. poweriae* began in 1961.
- Sternoptychidae tentative and sporadic identifications of hatchetfishes to genus were lumped to family.
- Astronesthidae specimen checked.
- Bathophilus spp. all specimens checked.
- Tactostoma macropus all specimens checked.
- Paralepididae all specimens examined and identified to species; residuals are small, poorly preserved or unavailable specimens.
- Scopelarchidae tentative and sporadic identifications to genus lumped to family.
- Lampanyctus spp. tentative and sporadic identifications to species lumped to genus.
- Lampanyctus regalis underrepresented because of inability to differentiate small larvae (<5 mm) from those of other species of the genus; counts may include other species of the genus because of difficulty in identifying larvae of this large and complex genus.
- Lampanyctus ritteri comment for L. regalis applies to this species.
- Stenobrachius leucopsarus all specimens seaward of station 100 checked.
- Triphoturus mexicanus specimens seaward of station 100 checked for misidentification of T. nigrescens.
 - Diogenichthys atlanticus all specimens at margins of range checked.
- Diogenichthys laternatus all specimens at margins of range checked.
- Hygophum spp. all specimens reidentified to species; residuals
 are small, poorly preserved or unavailable specimens.
- Hygophum atratum all specimens checked.
- Hygophum reinhardtii all specimens checked.
- Physiculus spp. all specimens checked.
- Ophidiiformes this category did not exist originally and ophidiiform larvae were included in *Brosmophycis marginata*, "Otophidium", "Zoarcidae", and "blenny"; identifications of

- B. marginata proved to be mostly correct and "Zoarcidae" to be a yet unidentified ophidiiform species; all "Otophidium" and "blenny" were reexamined and the former included Ophidion scrippsae, Chilara taylori and other ophidiiform taxa (moved to order); "blenny" contained O. scrippsae, C. taylori, and other ophidiiform taxa in addition to true blennioids.
- Trachipteridae tentative and sporadic identifications to genus were lumped to family.
- Melamphaes spp. all identifications ascribed to Melamphaidae were reexamined and assigned to genus (Melamphaes, Poromitra) or species (Scopelogadus bispinosus, Scopeloberyx robustus); larvae originally identified as Melamphaes spp. were not reexamined and this category may contain other melamphaid genera.
- Cottidae all specimens checked.
- Oxylebius pictus all specimens checked.
- Zaniolepis spp. all specimens checked.
- Sebastes spp. category may contain other scorpaenid genera, particularly in samples south of line 120.
- Blennioidei this is the residual of the completely reexamined "blenny" category, which also contained various misidentified ophidiiforms, and is now restricted to members of northern stichaeioid families and true blennioids (other than Hypsoblennius spp.) in the southern part of the pattern).
- Labridae all specimens originally identified to family were reexamined and assigned to genus (Halichoeres spp.) or species (Oxyjulis californica, Semicossyphus pulcher).
- Chromis punctipinnis records south of about line 120 may include other pomacentrid taxa.
- Howella brodiei all specimens checked; some originally identified as Apogonidae; in this report we list H. brodiei in the family Apogonidae for convenience, recognizing that its systematic affinities are not resolved.
- Carangidae all specimens checked; tentative and sporadic identifications to genus or species (except *Trachurus symmetricus* and *Seriola lalandi*) were lumped to family.
- Seriola lalandi all specimens checked.
- Gerreidae tentative and sporadic identifications to genus lumped to family.

- Haemulidae tentative and sporadic identifications to genus lumped to family.
- Girella nigricans all specimens checked.
- Caulolatilus princeps all specimens checked.
- Sciaenidae tentative and sporadic identifications to genus lumped to family.
- Scombridae all larvae identified to this family or constituent taxa (except Scomber japonicus) were reexamined and reassigned; residuals are small, poorly preserved or unavailable specimens.
- Nomeidae tentative identifications to genus lumped to family.
- Pleuronectiformes all specimens of this category (originally called "flatfish") were examined and reidentified; residuals are small, poorly preserved or unavailable specimens.
- Bothidae all specimens examined and reassigned; most were assigned to various paralichthyid genera.
- Citharichthys spp. all larvae identified to species were lumped to genus except C. stigmaeus; category includes larvae of Etropus spp.
- Citharichthys stigmaeus includes larvae larger than ca. 4.5 mm; smaller larvae are in Citharichthys spp.
- Paralichthys spp. all specimens of this genus were examined and most were assigned to P. californicus or Xystreurys liolepis.
- Xystreurys liolepis originally misidentified as Paralichthys californicus; all specimens reidentified.
- Glyptocephalus zachirus all specimens examined.
- Hypsopsetta guttulata some specimens were originally identified
 as Pleuronichthys spp.
- Microstomus pacificus all specimens examined.
- Pleuronichthys spp. all larvae of this genus and constituent species were examined and assigned to species; residuals are small, poorly preserved or unavailable specimens.
- Psettichthys melanostictus all specimens examined.

COMPUTER ENTRY AND EDITING

Each taxon on the original identification sheets was given a 3-digit code based on the list of codes in Haight et al. (1979). Taxon codes and counts from these sheets were keypunched by cruise and station, along with pertinent station and tow data and entered into the VAX 11/780 computer at the University of California, San Diego, Computing Center. After entries were completed for an entire year, print-out listings of taxa and counts on each station were compared with the original data sheets to eliminate keypunch errors. Next, data in the file were cross-checked with data on an existing file which contained: station and tow data; numbers of eggs of sardine, anchovy, and saury; numbers of larvae of sardine, anchovy, hake, jack mackerel, and Pacific mackerel; total number of fish eggs; and total number of fish larvae.

Discrepancies in ichthyoplankton data in these two files were corrected by inspecting original records from the sorting laboratory, the original ichthyoplankton identification sheets, and the samples themselves. Station and tow data discrepancies between the two files were corrected by reviewing ships' logs and deck tow sheets, original records from the sorting laboratory, cruise announcements, publications, header information on the ichthyoplankton identification sheets, and station plots generated for each cruise. Eventually all station and tow data were checked by comparing these sources.

The corrected ichthyoplankton data base was then examined statistically and outliers were found and checked as above. Distributional plots were then prepared for each taxon and these were checked by reviewing the data sources mentioned above and by examining archived specimens. A listing of each taxon by station (Table 4) was produced, which became the primary document for subsequent checks. Misidentifications found in geographic outlier checks and other misidentifications and data problems discovered in the course of examining archived samples resulted in several iterations of Table 4. Finally, totals in Table 4 were checked against annual summaries of incidence and abundance (Tables 2 and 3). Ecological analyses of the data were conducted concurrently with editing procedures and provided cross-checks that allowed correction of errors.

SPECIES SUMMARY

Larvae of northern anchovy (Engraulis mordax) represented 54% of all fish larvae taken on CalCOFI cruises during 1969 and numbered five times as many as the rockfish genus, Sebastes spp., the next most abundant taxon with 10% of the total larvae (Table 2, 3). Northern anchovy also ranked first in incidence; Sebastes ranked 3rd. The next most abundant species was the deepsea smelt Leuroglossus stilbius with 6.3% of the total, followed by the gonostomatid Vinciguerria leucetia with 5.6%; they ranked 7th and 8th respectively in incidence. Pacific hake, Merluccius

productus, ranked 5th in abundance (5.4%) and 13th in occurrence. Two myctophids, Triphoturus mexicanus and Stenobrachius leucopsarus ranked 6th (2.6%) and 7th (2.4%) in number, and 5th and 12th in occurrence. The final 3 taxa in the top 10 collected in 1969 were the croaker family Sciaenidae, with 1.5%, the sanddab genus Citharichthys spp., with 1.2%, and jack mackerel, Trachurus symmetricus, with 0.9% of total larvae. These 3 taxa ranked 28th, 4th and 21st in incidence. The appearance of croaker larvae in the top 10 may reflect the increased number of stations occupied on the shoreward end of each line where these larvae are most abundant. These 10 taxa contributed 89.4% to the total number of larvae collected in 1969; the remaining 10.6% was distributed among 141 taxa plus the disintegrated and unidentified categories. The top 10 taxa comprised 4 coastal demersal groups, 2 coastal pelagic species, and 4 midwater species.

EXPLANATION OF TABLES

- Table 1 This table lists by cruise the pertinent station and tow data for 1969, the volume of water filtered and standard haul factor for each tow, the percent of sample sorted, and the total numbers of fish eggs and larvae. CalCOFI cruises are designated by four digits; the first two indicate the year and the second two the month. Within each cruise the data are listed in order of increasing line and station number (southerly and seaward directions); the order of station occupancy is shown on the station charts (Figures 2-13). Stations are designated by two groups of digits; the first set indicates the line and decimal fraction and the second set indicates the station on the line. Time is listed as Pacific Standard Time at the start of each tow in 24-hour designation. Methods for determining depth, volume of water strained, standard haul factor, and percent sorted were described in the methods section. The values for total fish eggs and larvae represent raw counts (unadjusted for percent sorted or standard haul factor). Ship codes are as follows: JD, David Starr Jordan; MF, Miller Freeman; AX, Alexander Agassiz.
- Table 2 This table lists pooled occurrences of all larval fish taxa taken during 1969 in ranked order.
- Table 3 This table lists pooled counts of all larval fish taxa taken during 1969 in ranked order. Numbers are adjusted for percent sorted and standard haul factors.
- Table 4 This table gives numbers of fish larvae for each taxon, listed by station and calendar month in which the tow was taken. Counts are adjusted for percent of sample sorted and standard haul factor. Average values are given for stations occupied more than once during a

month. See Table 1 for station and tow data and Table 6 for listing of stations with multiple occupancies during a month. Multiple occupancies occurred when a station was occupied more than once during a calendar month; in some cases, multiple occupancies resulted from separate cruises. The orders are listed in "phylogenetic" sequence modified from Nelson (1984). Subtaxa within each order are listed alphabetically. Page numbers for each taxon are given in the index at the end of the report.

- Table 5 This table is a summary of pooled occurrences of all larval fish taxa taken on CalCOFI surveys from 1961 to 1969. Taxa are listed in the same order as in Table 4.
- Table 6 List of stations with multiple occupancies in one month during 1969.

ACKNOWLEDGMENTS

Elaine Sandknop originally identified larvae from CalCOFI cruises of 1969. Ronald Whyte coded each larval fish taxon or type and Rita Ford entered them into the computer. Debby Snow efficiently assisted in all aspects of data editing and retrieval. Cindy Meyer and James Ryan provided programming Dorothy Roll designed the CalCOFI data acquisition assistance. system and provided data processing support. Ken Raymond, Roy Allen, and Henry Orr helped with graphics and production of the report. Lorraine Prescott and Diane Forsythe prepared the manuscript for printing. Paul Smith determined statistical outliers, provided assistance during geographical outlier checks and offered helpful suggestions throughout the project. Izadore Barrett, Director of the Southwest Fisheries Center and Reuben Chief, Coastal Fisheries Resources Division, SWFC, provided the support critical to the completion of the project. James Thrailkill planned CalCOFI surveys and supervised cruises, data handling, and plankton sorting from 1949 to 1986 and is largely responsible for the high quality of these operations. Without the vision and direction of Elbert Ahlstrom and Elton Sette and the dedicated efforts of the many people who collected, processed, and analyzed the samples, this data base would not exist.

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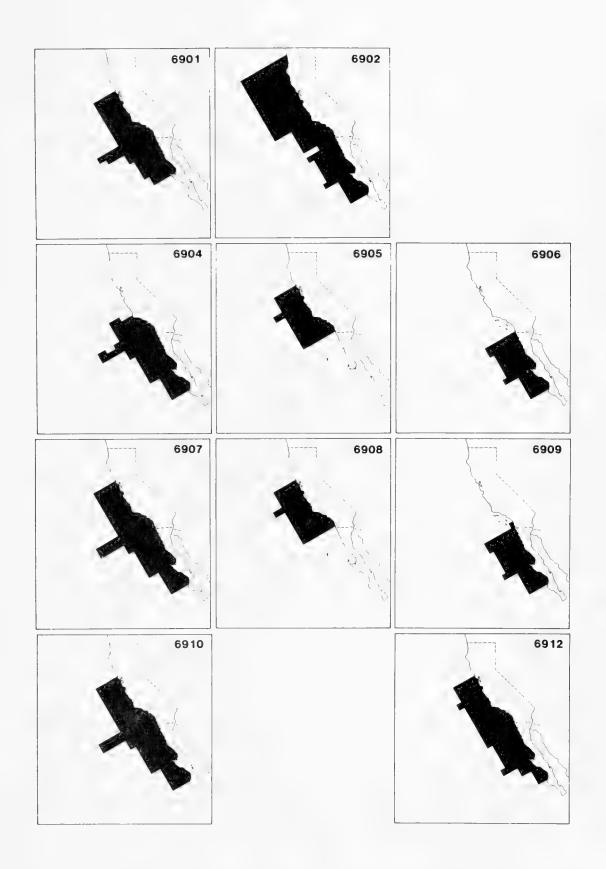


Figure 1. Composite arrangement of diagrammatic charts showing areas sampled on each CalCOFI cruise during 1969.

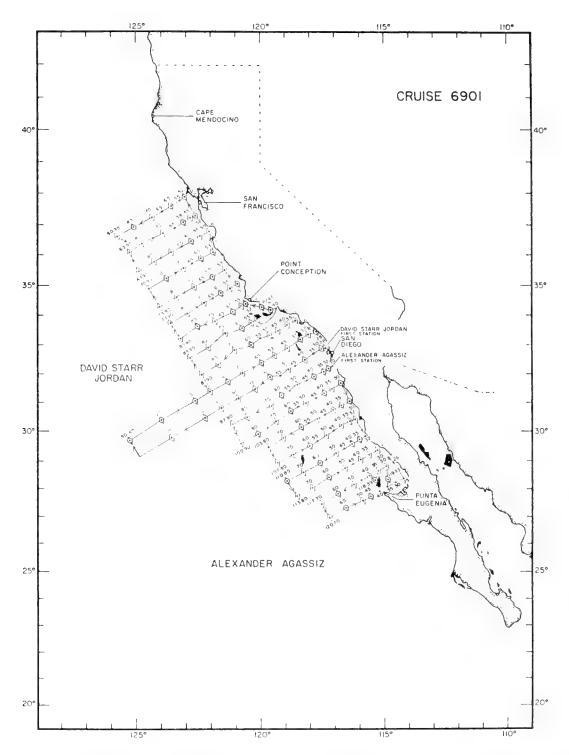


Figure 2. Station pattern for CalCOFI Cruise 6901 showing tracks for each vessel. Stations with plankton tows are indicated by a dot; circles designate hydrographic stations; diamonds signify STD recordings. Figures 2-13 modified from charts in Univ. of Calif., SIO (1976, 1977, 1979, 1980) to include only those stations listed in Table 1 of this report; see Table 1 for nearshore stations not shown on chart.

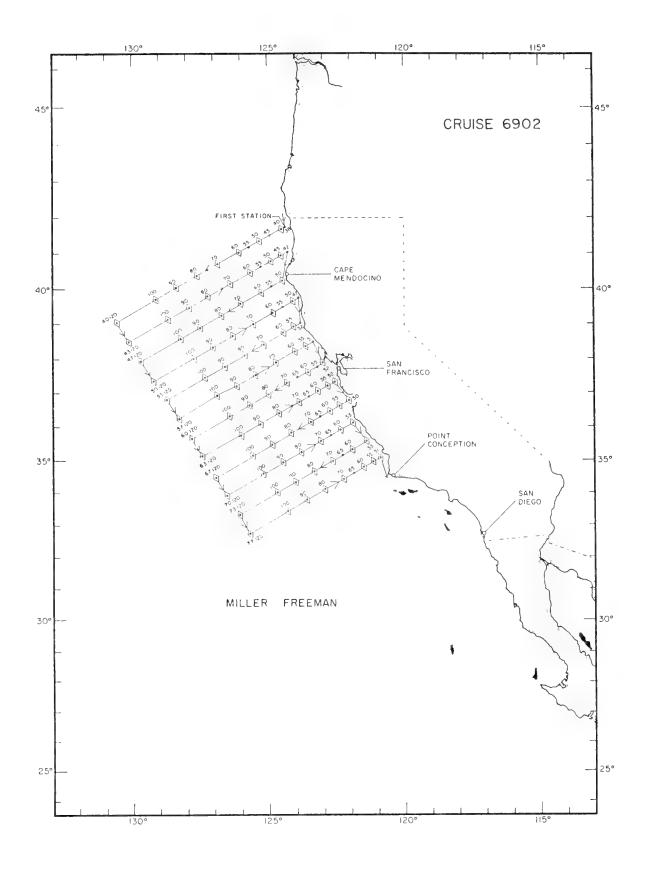


Figure 3. Station pattern for CalCOFI Cruise 6902 - Miller Freeman. Symbols as in Figure 2.

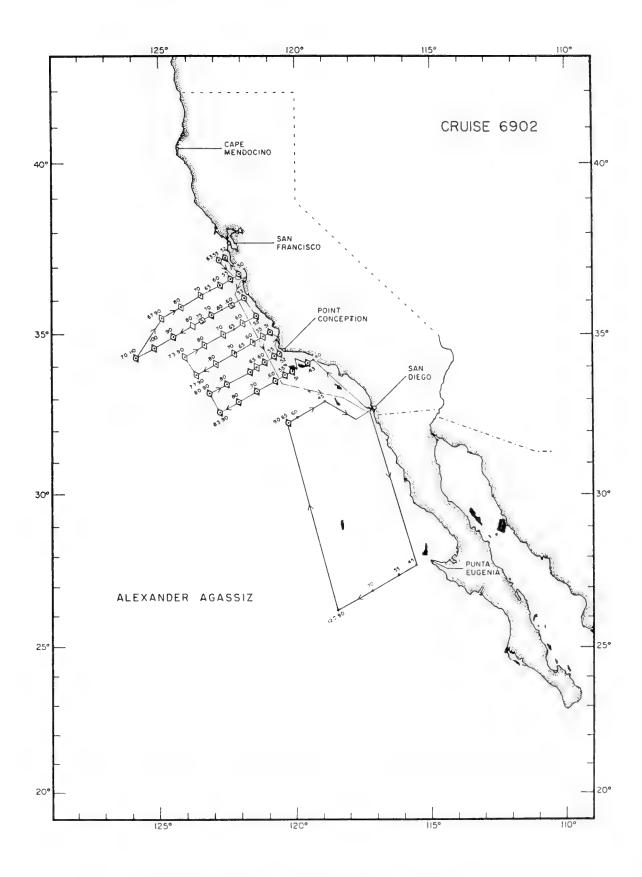


Figure 4. Station pattern for CalCOFI Cruise 6902 - Alexander Agassiz. Symbols as in Figure 2.

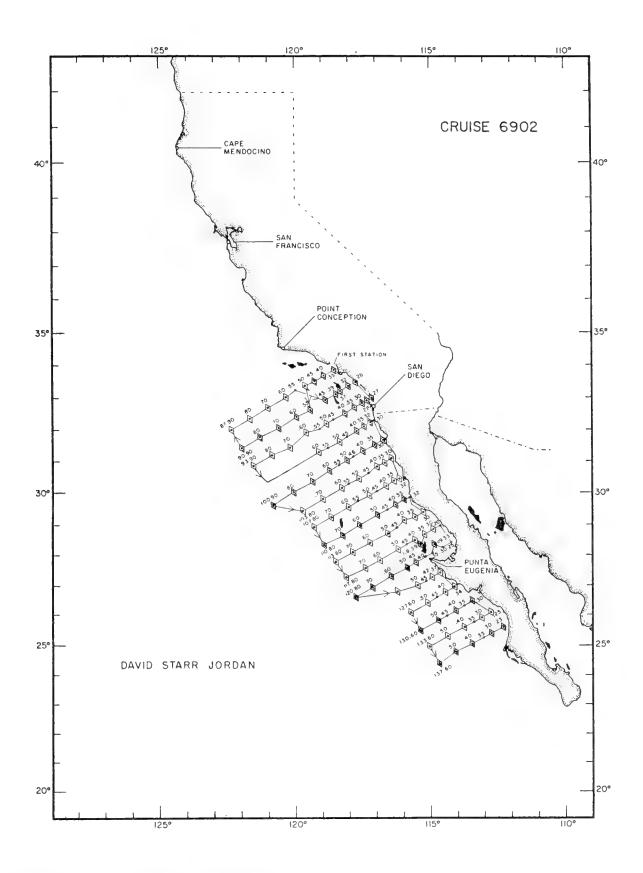


Figure 5. Station pattern for CalCOFI Cruise 6902 - David Starr Jordan. Symbols as in Figure 2.

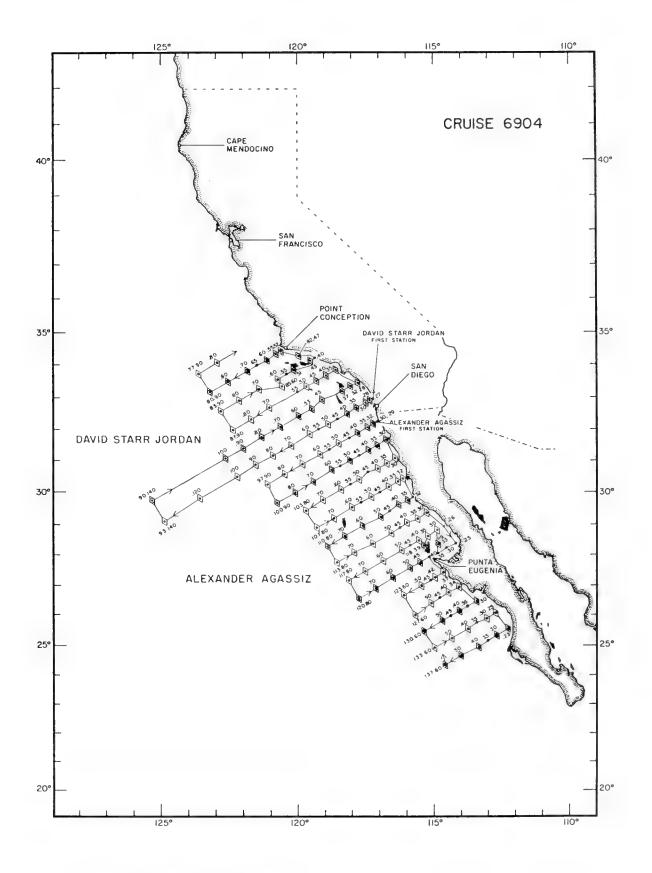


Figure 6. Station pattern for CalCOFI Cruise 6904. Symbols as in Figure 2.

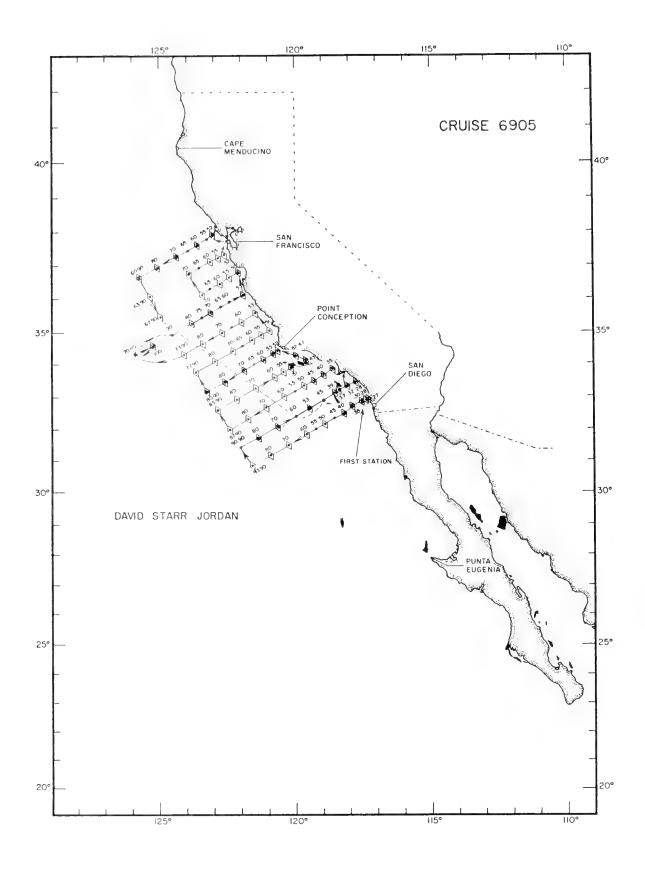


Figure 7. Station pattern for CalCOFI Cruise 6905. Symbols as in Figure 2.

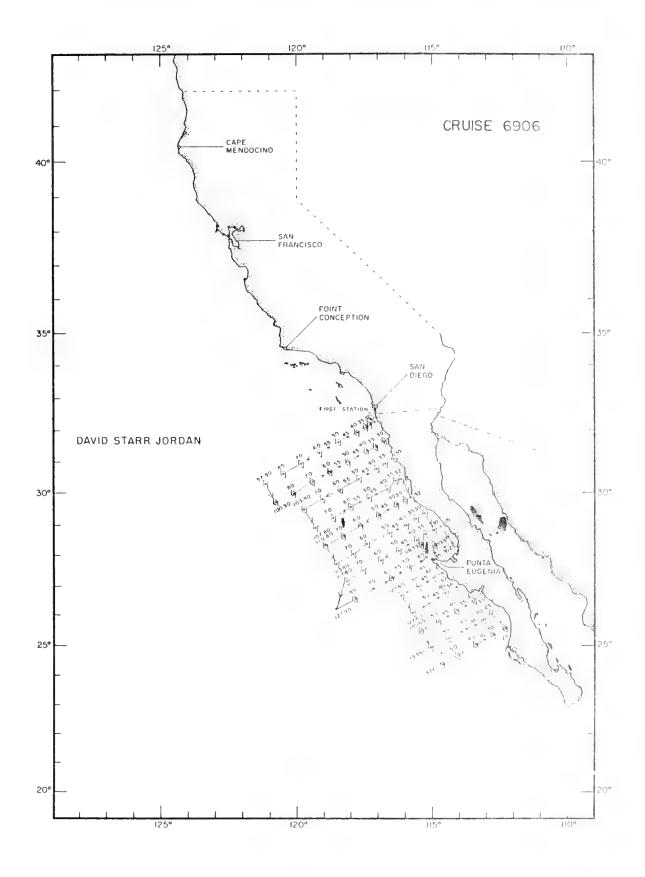


Figure 8. Station pattern for CalCOFI Cruise 6906. Symbols as in Figure 2.

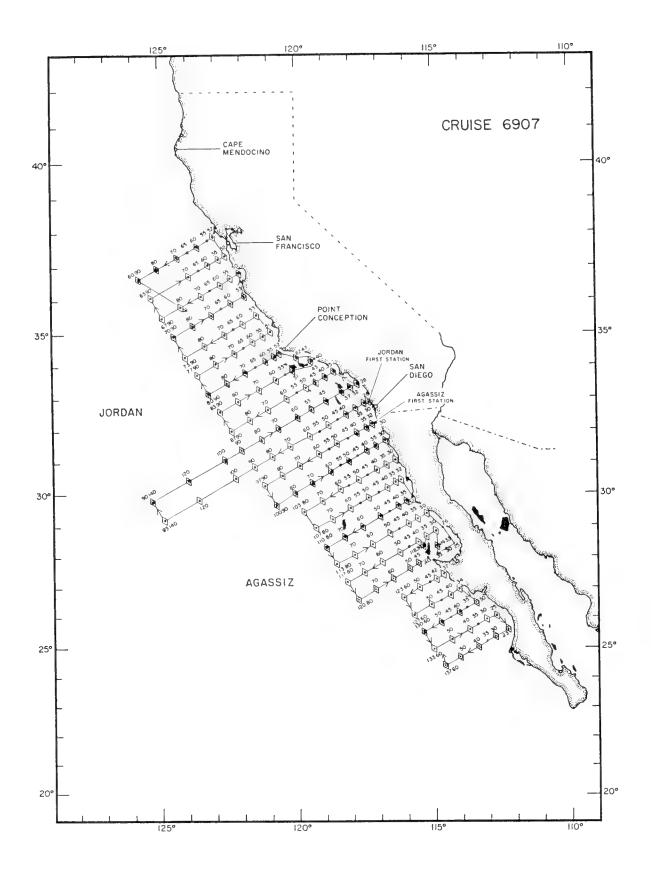


Figure 9. Station pattern for CalCOFI Cruise 6907. Symbols as in Figure 2.

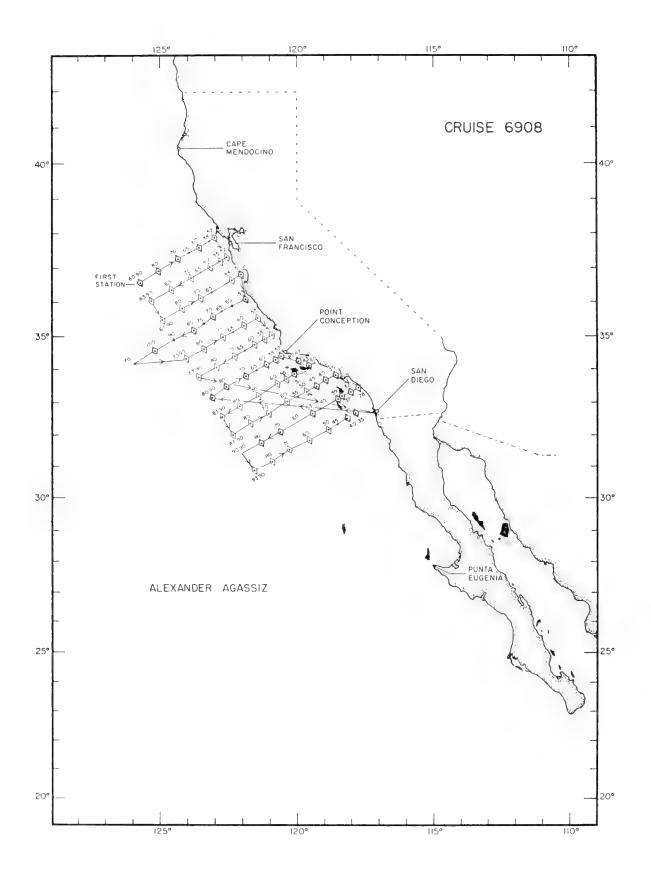


Figure 10. Station pattern for CalCOFI Cruise 6908. Symbols as in Figure 2.

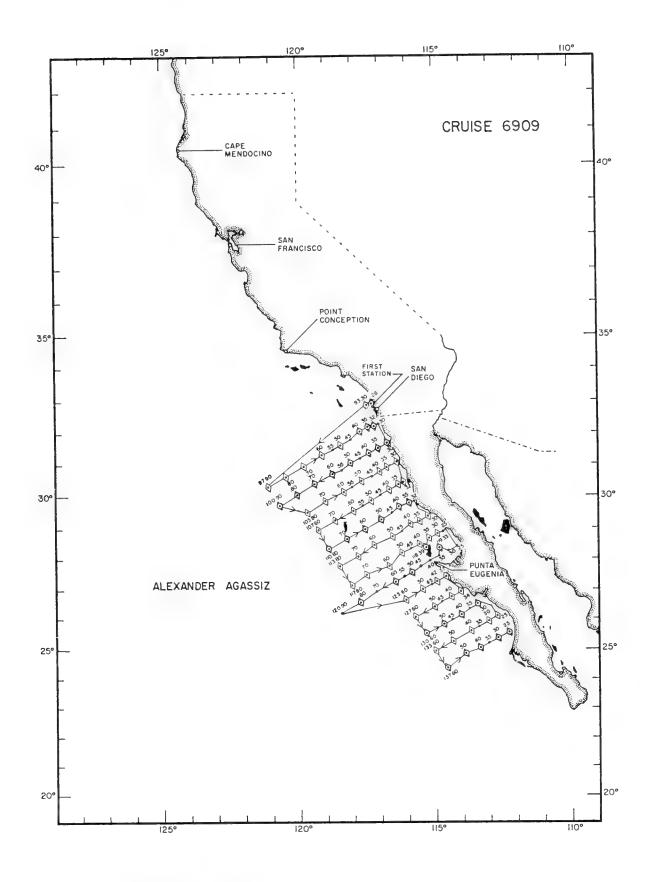


Figure 11. Station pattern for CalCOFI Cruise 6909. Symbols as in Figure 2.

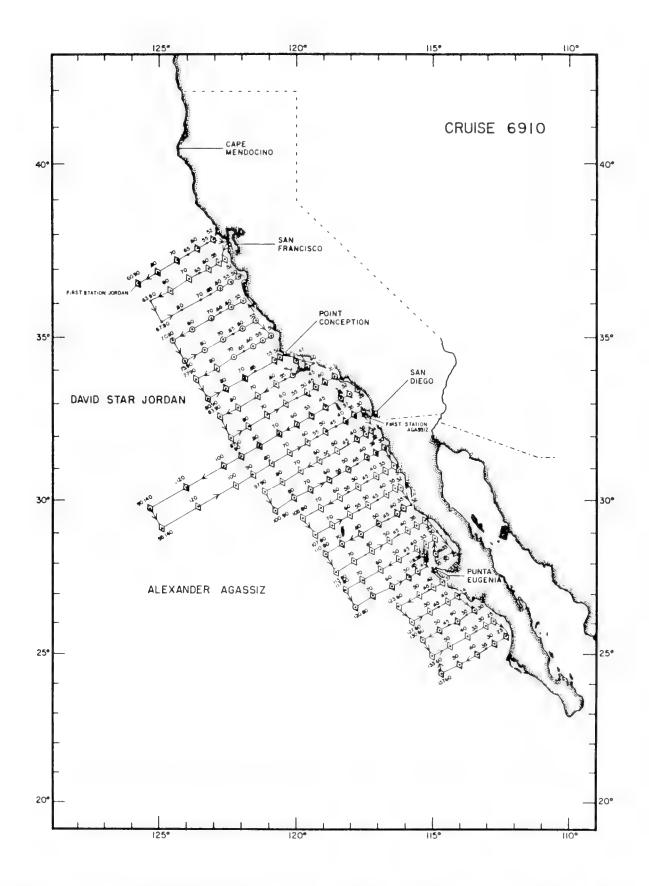


Figure 12. Station pattern for CalCOFI Cruise 6910. Symbols as in Figure 2.

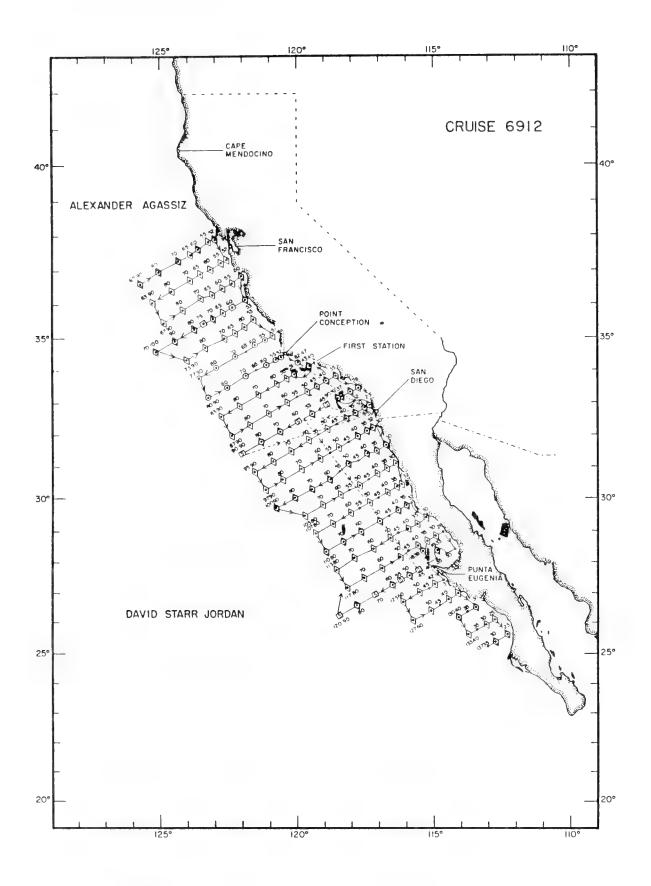


Figure 13. Station pattern for CalCOFI Cruise 6912. Symbols as in Figure 2.

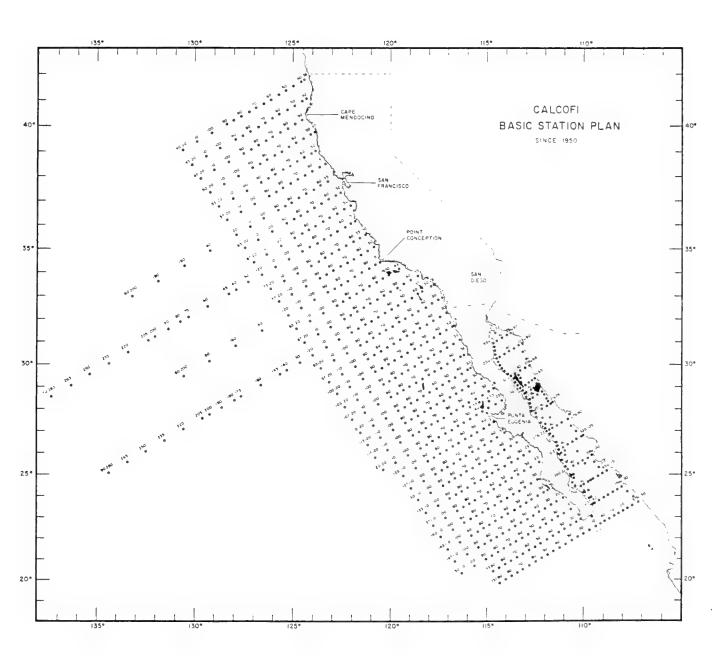


Figure 14. The basic station plan for CalCOFI cruises from 1950 to the present.

TABLE 1. Station and plankton tow data for CalCOFI cruises in 1969. Counts for fish eggs and larvae are not adjusted for standard haul factor or percent of sample sorted.

CalCOFI Cruise 6901

Total Eggs	1 1 1 2 2 3 3 3 8 3 4 3 5 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
Total Larvae	11100 1100 1100
Percent Sorted	
Stand- ard Haul Factor	22282888888888888888888888888888888888
Vol. Water Strained (cu. m)	113 9665 9665 9665 9665 9665 9665 9665 966
Tow Depth (m)	22 22 23 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Time (PST)	11803 11803 11934 11933
Tow Date yr. mo. day	699 011 22 699 011 25 699 011 25 699 011 25 699 011 25 699 011 25 699 011 25 699 011 22 699 011 22 690 011 22 600 011 22 600 011 22 600 011 22 600 01
Ship Code	666666666666666666666666666666666666666
Long.(W) deg. min.	122 53.1 123 34.0 122 53.1 122 54.0 122 54.0 122 54.0 123 36.0 123 36.0
Lat.(N) deg. min.	337 57.0 337 57.0 337 57.0 337 57.0 337 57.0 338 58.0 338 58.0 348 58.0 358 58.0 368 58.0 378 58
Station	55 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Line	60.00 600.00 600.00 600.00 600.00 600.00 600.00 600.00 600.00 700

calcori Cruise 6901

	Total Eggs	81 1 74455 1 74455 1 74455 1 74455 1 74455 1 74455 1 74455 1 74456 1 7	
	Total Larvae	28 1125 1928 1928 1922 1930 1930 1930 1033 1033 1033 1033 1033	
	Percent Sorted		
	Stand- ard Haul Factor	264200000000000000000000000000000000000	
	Vol. Water Strained (cu. m)	00000000000000000000000000000000000000	
106	Tow Depth	222 222 222 222 222 222 222 222 222 22	
ise 6	Time (PST)	00640 00640 00102330 0010231 0010231 0010231 0010231 0010231 0010231 0010231 0010231 0010231 0010233 0010233 0010233 0010233 0010233 0010233 0010233	
CalCOFI Crui	Tow Date yr. mo. day	69 001 113 669 001 113 669 001 114 669 001 115 669 001 117 7 7 69 001 118 8 699 001 117 7 699 001 118 699 001 115 699 001 115 699 001 115 699 001 115 699 001 115 699 001 115 699 001 115 699 001 115 699 001 115 699 001 115 699 001 115 699 001 115 699 001 115 699 001 110 699 001 110 699 001 100 699 001 100 699 001 100 007 699 001 100 699 001 100 699 001 100 699 001 100 699 001 100 007 699 001 100 699 001 100 699 001 100 699 001 100 699 001 100 007 699 001 100 699 001 100 007	
	Ship	666666666666666666666666666666666666666	
	Long.(W) deg. min.	122 16.0 123 39.0 120 36.5 120 36.5 120 36.5 121 09.0 121 30.0 122 32.0 119 58.0 119 58.0 120 22.0 120 22.0 121 26.0 122 08.0 122 24.0 122 24.0 123 13.0 120 22.0 121 26.0 122 24.0 123 23.0 120 22.0 121 43.0 122 24.0 123 23.0 124 00.0 125 17.2 117 19.5 117 19.5	
	Lat.(N) deg. min.	332 25.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
	Station	70.0 80.0 80.0 80.0 60.0 70.0 70.0 80.0 80.0 80.0 80.0 80.0 8	
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Total Eggs	20000000000000000000000000000000000000
Total Larvae	5 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Percent Sorted	
Stand- ard Haul Factor	33332533525353553555555555555555555555
Vol. Water Strained (cu. m)	6661 6674 6674 6674 6674 6674 6674 6674
Tow Depth (四)	75000 7500 7500 7500 7500 7500 7500 750
Time (PST)	110011 100011 1000000
Tow Date yr. mo. day	699 01 00 00 00 00 00 00 00 00 00 00 00 00
Ship Code	666666666666666666666666666666666666666
Long.(W) deg. min.	1117 51 1118 1119 1118 1119 1119 1119 1119 111
Lat.(N) deg. min.	332 332 332 332 332 332 333 333
Station	11000000000000000000000000000000000000
Line	9933.0 9933.0 9933.0 9933.0 997.0 907.0 907.0 907.0 907.0 907.0 907.0 907.0 907.0 907.0 907.0 907.0 907.0 90

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	Total	305 205 1188 205 205 205 205 205 205 205 205 205 205	
	Total Larvae	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	Percent Sorted		
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	Vol. Water Strained (cu. m)	66999999999999999999999999999999999999	7
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	Long.(W) deg. min.	1116 027 01 1116 027 01 1116 027 02 11116 027 02 02 02 02 02 02 02 02 02 02 02 02 02	. 76
	Lat.(N) deg. min.	330 27.8 330 27.8 330 26.22 330 27.8 330 27.8 330 27.8 330 27.8 330 27.8 330 27.3 340.3 350 25.3 360.3	. 76
	Station	######################################	•
	Line	1007 1007	. 0.

TABLE 1. (cont.)

Total Eggs 143 Total Larvae 64 69 Percent Sorted 100.0 Vol. Stand-Water ard Strained Haul (cu. m) Factor $\frac{3.06}{3.06}$ 676 701 Tow Depth 207 Ship Tow Date Time Code yr. mo. day (PST) 0240 1918 $01 29 \\ 01 28$ 69 AX AX Long. (W) deg. min. 116 34.2 117 12.9 Lat.(N) deg. min. 27 18.8 26 56.5 Line Station 60.07 120.0

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Total Eggs	1 22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
Total Larvae	3 3 4 5 7 5 8 8 8 9 4 7 8 8 8 9 4 8 8 9 8 9 8 9 9 8 9 9 9 9 9 9	
Percent Sorted		
Stand- ard Haul Factor	14866448800008448888011080000480000000000	
Vol. Water Strained	6666 666 666 666 666 666 666 666 666 6	
Tow Depth	11988888888888888888888888888888888888	
Time (PST)	00000000000000000000000000000000000000	
Tow Date yr. mo. day	699 01 26 699 01 26 699 01 26 699 01 27 77 7 7 7 8 8 8 699 02 02 02 01 31 699 02 02 01 31 699 02 02 01 31 699 02 02 01 31 699 02 02 01 699 02 02 01	
Ship Code		
Long.(W) deg. min.	124 27.8 125 523.0 125 523.0 125 66.0 126 68.8 127 46.0 128 27.0 128 25.0 127 40.0 128 20.0 127 13.0 127 13.0 128 45.0 128 47.0 128 47.0 128 47.0 129 44.5 127 68.0 128 17.0 128 17.0 129 44.5 127 69.0 127 13.0 128 17.0 128 17.0 128 17.0 128 17.0 128 17.0 127 13.0 127 13.0 128 17.0 128 17.0 127 13.0 127 13.0 128 17.0 128 17.0 128 17.0 128 17.0 128 17.0 128 17.0 128 17.0 128 17.0 129 18.0 127 18.0 127 18.0 128 17.0 128 17.0 128 17.0 128 17.0 128 17.0 129 18.0 127 18.0 128 17.0 128 17.0 128 17.0 128 17.0 128 17.0 129 18.0 127 18.0 128 17.0 128 17.0 128 17.0 128 17.0 128 17.0	
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	Total Eggs	205 205 205 205 361 100 100 100 100 100 100 100 100 100 1	
	Total Larvae	1	
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	Lat.(N) deg. min.	388 220 0 3 3 4 7 0 0 3 3 6 2 3 3 0 0 3 3 6 2 3 3 0 0 3 3 6 2 3 0 0 0 3 3 6 2 3 0 0 0 3 3 6 2 3 0 0 0 0 3 3 6 2 3 0 0 0 0 3 3 6 2 3 0 0 0 0 3 3 6 2 3 0 0 0 0 3 3 6 2 3 0 0 0 0 3 3 6 2 3 0 0 0 0 3 3 6 2 3 0 0 0 0 3 3 6 2 3 0 0 0 0 3 3 6 2 3 0 0 0 0 3 3 6 2 3 0 0 0 0 3 3 6 2 3 0 0 0 0 3 3 6 2 3 0 0 0 0 3 3 6 2 3 0 0 0 0 0 3 3 6 2 3 0 0 0 0 0 3 3 6 2 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
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Tow Date yr. mo. day	669 002 22 00 00 00 00 00 00 00 00 00 00 00
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	Long.(W) deg. min.	121 34.0 121 35.0 121 55.0	21 54. 22 16. 22 16.	22 57. 22 56. 23 39.	24 20.	20 32. 20 36.	21 09. 21 29.	21 41. 22 31.	23 09. 19 21. 19 23.	20 07. 20 24.	20 45. 21 26.	20 06. 20 48.	18 29.	19 19. 19 39.	20 00. 20 21.	21 02. 21 43.	22 24. 17 46.	18 03. 18 22.	18 55.	19 29.
	Lat.(N) deg. min.	34 44.0 34 44.7 34 34.0	4 4 3 4	4 04.	24.24	4 26.	3 59.	3 29.	4 13.	3 51.	3 34. 3 13.	2 55.	30 co	330.	3 13.	2 39. 2 20.	1 59. 3 28.	3 20.	2 5 4 .	2 36.
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Total Eggs	15884 1688 1688 1688 1688 1688 1688 1688 1688 1688 1788 1888
Total Larvae	1263 2028 10263 10
Percent Sorted	
Stand- ard Baul Factor	
Vol. Water Strained	55999999999999999999999999999999999999
Tow Depth	22222222222222222222222222222222222222
Time (PST)	11842 11844 11842 11
Tow Date yr. mo. day	699 002 220 003 233 269 005 233 269 005 233 269 005 233 269 005 233 269 005 233 269 005 233 269 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 233 250 005 250 005 25
Ship Code	¥6¥86866666666666666666666666666666666
Long.(W) deg. min.	1119 57.5 1120 17.0 120 17.0 121 19.5 122 100.0 117 21.8 117 21.8 118 37.0 118 37.0 119 09.0 110 34.5 117 25.8 117 25.0 118 24.0 118 24.0 119 25.0 119 25.0 1118 24.0 1118 24.0 1118 24.0 1119 25.0 1119 25.0 1118 25.0 1118 27.0 1118 27.0 1118 27.0 1118 27.0 1118 27.0 1118 27.0 1118 27.0 1118 27.0 1118 27.0 1118 27.0 1119 27.0 1116 21.0
Lat.(N) deg. min.	332 25 331 22 25 331 22 25 331 22 25 332 22 25 332 22 25 333 22 25 333 25 25 335 25 25 337 25 25 337 25 25 338 25 25 338 25 25 338 25 25 339 25 25 339 25 25 330 25 25 350 2
Station	00000000000000000000000000000000000000
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	Total Eggs	100 2 3 3 5 5 6 5 7 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6	32
	Total Larvae	10509439 105096	2
	Percent Sorted		00
	Stand- ard Haul Factor	$\begin{array}{c} \mathbf{u} \mathbf{u} \mathbf{u} \mathbf{u} \mathbf{u} \mathbf{u} \mathbf{u} u$	œ
	Vol. Water Strained	00000000000000000000000000000000000000	4
2069	Tow Depth	22222222222222222222222222222222222222	40
Cruise	Time (PST)	00120 00120 00120 00120 00120 00120 00120 00120 00110 0010 00110 0	82
Calcor1 Cr	Tow Date yr. mo. day	699 002 222 233 25 25 25 25 25 25 25 25 25 25 25 25 25	9 02 2
	Ship	666666666666666666666666666666666666666	GF.
	Long.(W) deg. min.	1118 02.0 1119 04.0 1119 04.0 1116 04.0 1116 04.0 1117 00.0 1117 00.0 1118 04.0 1118 00.0 1118 14.0 1118 14.0	14 15.
	Lat.(N) deg. min.	30 15.5 30 0229 488.0 30 027.5 30 027.8 30 027.8 30 027.8 30 021.5 30	8 22.
	Station	555 565 565 565 565 565 565 565	5
	Line	20.00000000000000000000000000000000000	0.

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	Total Eggs	263 263 263 264 1089 1089 1089 1089 1089 1089 1089 1099	
	Total Larvae	11881 4 28 141 188 193211188 2 141 188 2 19321118 19321128 19303030 1941026 1941026 195228 195228 195226 195228 195226 195228 195226 195228 195226 195228 195226 195228 195226 195228 19	
	Percent Sorted		
	Stand- ard Haul Factor		
	Vol. Water Strained	00000000000000000000000000000000000000	
2060	Tow Depth	22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
cruise	Time (PST)	20000000000000000000000000000000000000	
Carcori Cr	Tow Date yr. mo. day	66999999999999999999999999999999999999	
	Ship	666266262626262666666666666666666666666	
	Long.(W) deg. min.	1114 34.0 1115 333.0 1115 333.0 1115 333.0 1116 122.8 1117 410.0 1117 410.0 1118 24.0 1118 24.0 1119 44.0 1119 44.0 1111 45.0 1111 46.0 1112 114.0 1113 02.0 1114 05.0 1114 05.0	
	Lat.(N) deg. min.	228 133 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
	Station	WW444RNR067789WW44RNRWW44RNRWW4RNRWW4RNRWW4RNRWW4RNRWW4RNRWW4ARNRWW4RNRWW4RNRWW4RNRWW4RNRWW4RNRWW4RNRWW4RNRWW4RNRWW4RNRWW4RNRWWARNRWW4RNRWW4RNRWW4RNRWW4RNRWW4RNRWWARNRWWWARNRWWWARNRWWWARNRWWWARNRWWWARNRWWWARNRWWWARNR	
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	Total Eggs	100 100 100 100 100 100 100 100 100 100	
	Total Larvae	31 1933 1934 1937 1933 103 103 104 104 104 1018 1018 1018 1018 1018 10	
	Percent Sorted		
	Stand- ard Haul Factor	88888800448111888048844646 967888889004481118800488440 96788888890448111880488440 96788888890448111880488440 96788888890448111880488440 96788888890448111880488440 967888888904881118884 967888888904881 96788888890488 96788888890488 96788888890488 96788888890488 96788888890488 9678888888 9678888888 967888888 967888888 967888888 967888888 967888888 967888888 96788888 96788888 967888888 967888888 96788888 96788888 96788888 96788888 96788888 96788888 96788888 96788888 96788888 96788888 96788888 96788888 96788888 96788888 96788888 96788888 9678888	
	Vol. Water Strained (cu. m)	6622 6636 6636 6636 6636 6636 6636 6636	
6904	Tow Depth (m)	22152 2213 2213 2213 2213 2213 2213 2213	
uise (Time (PST)	11120 00135 001350 001120 001120 001120 001120 001130 00122 00123 00123 00123 00123 00123 00123 00123 00133 00133	
CalCOFI Cri	Tow Date yr. mo. day	66999999999999999999999999999999999999	
	Ship	666666666666666666666666666666666666666	
	Long.(W) deg. min.	122 57.0 123 39.0 120 48.0 121 39.0 121 30.0 122 132.0 123 132.0 113 59.0 113 59.0 113 59.0 113 59.0 114 59.0 115 59.0 116 59.7 117 59.0 117 51.5 118 55.5 119 59.0 110 59.0 111 43.0 112 2 4.0 113 2 50.0 114 55.0 115 2 50.0 117 19.0 117 19.0	
	Lat.(N) deg. min.	33 2 26 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
	Station	80.00 80.00 5521.00 655.00 700.00 800.00	
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	Total Eggs	5232 3332 3332 3453 127 107 107 107 107 107 107 107 10	
	Total Larvae	1000 1330 1330 1330 1444 1451 1451 1451 1451 1451 1451 145	
	Percent Sorted		
	Stand- ard Haul Factor	21.33.33.33.33.33.33.33.33.33.33.33.33.33	
	Vol. Water Strained	6693 6693 6693 6693 6693 6693 6693 6693	
6904	Tow Depth	22222222222222222003 200332222222222222	
Cruise 6	Time (PST)	00000 00000 00000 00000 00000 00000 0000	
CalCOFI Cru	Tow Date yr. mo. day	669 004 005 005 006 009 007 005 009 009 009 009 009 009 009 009 009	
	Ship Code y	66666666666666666666666666666666666666	
	Long.(W) deg. min.	1118 33.0 1120 133.3 1120 133.3 1120 14.0 1221 34.0 1221 35.0 1221 35.0 123 24.0 123 24.0 124 25.0 125 26.0 126 27.5 127 27.0 128 27.5 129 27.5 120 27.0 120	
	Lat.(N) deg. min.	332 20 20 20 20 20 20 20 20 20 20 20 20 20	
	Station	8800.000.000.000.000.000.000.000.000.00	
	Line	00000000000000000000000000000000000000	

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	Total	20 20 30 30 116 679 110 673 110 125 120 120 120 120 120 120 120 120 120 120
	Total Larvae	11 008 008 00 00 00 00 00 00 00 00 00 00 0
	Percent Sorted	
	Stand- ard Haul Factor	323222233232222222222222323323323323323
	Vol. Water Strained	6645 6645 6645 710 6641 710 6641 710 6641 6643 7064 7064 7064 7064 7064 7064 7064 7064
6904	Tow Depth	22002 22008 2208 22008 22008 22008 22008 22008 22008 22008 22008 22008 22008 22008 2008
se	Time (PST)	06110 003110 003110 003110 003110 00334 00334 00334 00334 00334 00337 0037 00337 00337 00337 00337 00337 00337 00337 00337 00337 00337 003
CalCOFI Crui	Tow Date yr. mo. day	69 04 09 09 09 09 09 09 09 09 09 09 09 09 09
	Ship	**************************************
	Long.(W) deg. min.	1116 21.7 1117 42.0 1117 42.0 1118 40.0 1118 40.0 1116 19.9 1116 19.9 1116 19.9 1116 19.9 1116 19.0 1117 15.0 1118 18.0 1118 18.0 1118 18.0 1118 18.0 1119 19.0 1119 19.0 1119 19.0 1114 10.7 1114 10.7 1115 13.0 1116 13.0 1116 13.0 1117 13.0 1118 10.3 1118 10.3 1119 10.3 1119 10.3 1119 10.3
	Lat.(N) deg. min.	30 20 30 10.5 20 20 20 20 20 20 20 20 20 20 20 20 20
	Station	W44RR06CBWW44RR0RWW44RR
	Line	000000000000000000000000000000000000000

CalCOFI Cruise 6904

	Total Eggs	210 210 33 22 22 11 118		150 112 112 112 123 124 132 132 133 133 134 135 135 135 135 135 135 135 135 135 135
	Total Larvae	21 28 78 76 43 33 120	20 16 31 147	33 11 11 14 14 15 16 10 10 10 10 10 10 10 10 10 10 10 10 10
	Percent Sorted			10000000000000000000000000000000000000
Stand-	Haul Factor	000000000000000000000000000000000000000	ja ou 400	23.393 23.393 23.393 23.393 23.393 23.393 23.393 23.393 33.393 33.393 33.393
Vol.	Strained (cu. m)	, rosossau.	400450	215 6689 6740 7288 7288 7288 7286 668 668 698 698
TOE	£	2002 2003 11998 11998	202 211 209 209 209	200 200 201 201 201 201 200 200 200 200
	Time (PST)	5052044552	9116 9116 9116	2138 0010 0010 10705 11615 11330 11330 11330 0115 0115 0115 0115
	Tow Date yr. mo. day	000000000000000000000000000000000000000	00000000000000000000000000000000000000	699 04 17 699 04 18 699 04 18 699 04 18 699 04 19 699 04 19 699 04 19 699 04 20 699 04 20 690 04 20 690 04 20
	Ship	XX	XXXXXX	Y
	Long.(W) deg. min.	117 488 117 488 117 488 118 118 118 118 118 118 118 118 118	115 0 4 2 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	113 2 8 8 8 113 2 8 8 8 113 2 8 9 8 8 113 2 4 9 0 0 113 2 4 5 0 5 113 2 4 8 0 0 113 2 4 5 0 5 113 2
	Lat.(N) deg. min.	6 5 5 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	66666666666666666666666666666666666666	266 128 226 128 226 128 226 128 225 225 225 225 225 225 225 225 225 2
	Station	300278006	400000	60000000000000000000000000000000000000
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	Total Eggs	588 1191 1191 1191 1191 1191 1191 1191 1	9
	Total Larvae	2 2 2 3 1 1 3 1 1 3 2 4 2 1 1 3 1 1 2 4 2 1 1 3 3 3 1 2 4 2 1 1 3 3 3 3 1 2 4 5 1 3 3 4 7 4 3 1 2 4 5 3 1 2 4 5 3 1 2 4 5 3 1 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	
	Percent Sorted		00
	Stand- ard Haul Factor	ZZUARUUNZUZUARUUNUNUNUNUNUNUNUNUNUNUNUNUNUNUNUNUNUN	₹.
	Vol. Water Strained (cu. m)	10000000000000000000000000000000000000	_
6905	Tow Depth	2222 222222222222222222222222222222222	-
S O	Time (PST)	222 00221 0022130 002133 002133 002133 002133 002133 002133 002133 002133 002133 002133 002133 002133 002133 002133 002133 0033 00333 0033	62
CalCOFI Crui	Tow Date yr. mo. day	66999999999999999999999999999999999999	9 05 1
	Ship Code	688888888888888888888888888888888888888	JD
	Long.(W) deg. min.	122 53.1 123 37.0 123 37.0 123 37.0 122 54.0 122 56.0 122 56.0 122 56.0 122 25.0 123 27.0 123 27.0 121 28.5 122 40.0 123 27.0 121 28.5 121 28.5 122 40.0 123 27.0 123 27.0 121 28.5 121 28.5 121 28.5 121 28.5 122 40.0 123 27.0 123 27.0 121 28.5 121 28.5 121 28.5 121 28.5 121 28.5 121 28.5 122 40.0 123 27.0 121 28.5 121 28.5	22 16.
	Lat.(N) deg. min.	337 337 337 337 337 337 337 337 337 337	4 24.
	Station	10000000000000000000000000000000000000	0
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	Total Eggs	11	
	Total Larvae	22 1 7 8 1 1 2 8 8 8 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9	
	Percent Sorted	1000.00 1000.00 1000.00 1000.00 1000.00 1000.00 1000.00 1000.00 1000.00 1000.00 1000.00 1000.00 1000.00 1000.00 1000.00 1000.00	
	Stand- ard Haul Factor	EURA404EEEEGA40EEEEEEEEEEEEEEEEEEGA6000000000000000000	
	Vol. Water Strained (cu. m)	55 50 50 50 50 50 50 50 50 50	
6905	Tow Depth	22 22 22 22 22 22 22 22 22 22 22 22 22	
ige	Time (PST)	0156 01156 01157 01157 01157 01157 01157 01157 01157 01167 0167 0	
CalCOFI Cru:	Tow Date yr. mo. day	69 05 15 69 05 11 69 05 10 69 05 11 69 05 05 11 69 05 05 05 05 05 05 05 05 05 05 05 05 05	
	Ship	555555555555555555555555555555555555555	
	Long.(W) deg. min.	122 57.0 120 35.5 120 36.5 120 36.5 120 36.5 121 30.0 121 31.0 123 13.0 119 22.0 119 22.0 120 24.5 120 24.5 120 24.5 120 24.5 121 26.0 122 24.0 118 37.5 119 39.5 119 57.5 119 57.5 119 57.5 110 38.5 117 31.0 117 31.0	
	Lat.(N) deg. min.	33333333333333333333333333333333333333	
	Station	0.000000000000000000000000000000000000	
	Line	777.0 880.0 880.0 880.0 990.0 990.0 993.0	

TABLE 1. (cont.)

271 671 99 117 135 305 Total Eggs Total Larvae 321 195 162 146 60 77 Percent Sorted 100.0 1000.0 1000.0 1000.0 3.04 3.20 3.60 3.23 2.96 ard Haul Factor Stand-Strained Vol. Water (cu. m) 698 652 591 636 686 688 Tow Depth (m) 213 208 212 206 206 203 208 6905 Time (PST) 1405 1722 2015 0040 0522 1008 CalCOFI Cruise Tow Date yr. mo. day 06 06 07 07 002200 Ship Code 666666 Long. (W) deg. min. 52.5 13.5 34.0 14.0 54.5 118 119 119 120 120 Lat.(N) deg. min. 10.0 00.0 50.0 30.0 10.0 Line Station 55.0 60.0 70.0 90.0 93.0000

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Total Eggs	22528 2322
Total Larvae	2 0 0 4 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 1 0 0 1
Percent Sorted	
Stand- ard Haul Factor	618889999999999999999999999999999999999
Vol. Water Strained (cu. m)	00000000000000000000000000000000000000
Tow Depth	2010 2010 2010 2010 2010 2001 2001 2001
Time (PST)	11199999999999999999999999999999999999
Tow Date yr. mo. day	699 06 099 099
Ship	666666666666666666666666666666666666666
Long.(W) deg. min.	1117 04.7 1117 04.7 1117 27.5 1118 29.0 1118 29.0 1119 50.0 1120 31.0 1131 10.5 114 46.5 115 46.5 116 46.5 117 24.0 118 27.0 118 27.0 119 24.0 1118 25.0 1117 44.0 1118 25.0 1118 25.0 1118 25.0 1118 25.0 1119 43.0 1116 45.0 1118 25.0 1119 43.0 1119 43.0 1119 43.0 1119 43.0 1119 43.0
Lat.(N) deg. min.	332 117.33 117.5 1
Station	84800000000000000000000000000000000000
Line	97.0 97.0 97.0 97.0 97.0 97.0 97.0 97.0

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	Total Eggs	960 3325 3325 3326 3326 1006 1	
	Total Larvae	133355 133355 1336 1336 1336 1336 1336 1	
	Percent Sorted	10000000000000000000000000000000000000	
	Stand- ard Haul Factor	33322000000000000000000000000000000000	
	Vol. Water Strained (cu. m)	6556 6558 6558 6558 6558 6558 6558 6558	
9069	Tow Depth (m)	22008 20038 20038 20038 20038 20038 2003 2003	
Cruise	Time (PST)	2109 02354 07250 07250 07250 17713 17713 17713 17713 17713 17713 0720 0720 0720 0720 0720 0720 0720 072	
Calcuri Cr	Tow Date yr. mo. day	69 06 15 69 06 15 69 06 15 69 06 15 69 06 15 69 06 15 69 06 16 69 06 17 69 06 17 69 06 17 69 06 17 69 06 17 69 06 17 69 06 17 69 06 17 69 06 18 69 06 18 69 06 18 69 06 18 69 06 18 69 06 18 69 06 18 69 06 18 69 06 18 69 06 18 69 06 23 69 06 23 69 06 24 69	
	Ship	666666666666666666666666666666666666666	
	Long.(W) deg. min.	1116 19.5 1116 39.5 1117 39.0 1118 18.0 1115 18.0 1115 18.0 1115 18.0 1116 19.0 1117 55.0 1118 33.5 1118 33.5 1118 33.5 1118 10.0 1118 10.0	
	Lat.(N) deg. min.	229 226 28 28 28 28 28 28 28 28 28 28 28 28 28	
	Station	448878888884488678888888888888888888888	
	Line (23333000000000000000000000000000000000	

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Total Eggs	331 291 2002 11002 3 2002 1123 1002 1003 1003 1003 1004 1004 1004 1004 1004
Total Larvae	1965 1965 1965 1965 1965 1965 1965 1965
Percent Sorted	100 100 100 100 100 100 100 100 100 100
Stand- ard Haul Factor	10000000000000000000000000000000000000
Vol. Water Strained	186 632 662 663 663 663 663 663 663 663 66
Tow Depth	2013 2003 2003 2003 2003 2003 2003 2003
Time (PST)	11213 0835 0835 09315 0315 1620 1755 2049 0832 0832 0832 0832 0833 0833 0833 0833
Tow Date yr. mo. day	69 06 25 69 06 25 69 06 25 69 06 25 69 06 25 69 06 25 69 06 27 69 06 27
Ship	66866666666666 66666666666666666666666
Long. (W) deg. min.	1114 002.2 1114 30.0 1115 48.5 1113 24.0 1113 24.0 1113 24.0 1113 24.0 1113 24.0 1112 19.0 1112 19.0 1113 24.5 1113 24.5 1113 24.5 1113 24.5 1113 24.5 1113 24.5 1113 24.5
Lat.(N) deg. min.	26 557 5 26 334 0 26 333 0 26 333 0 26 333 0 26 333 0 25 20 0 26 0 27 20 0 28 32 0 28 34 0 28 36 0 28
Station	656 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Line	227.0 227.0 227.0 227.0 237.0 237.0

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Total Eggs	100 100 100 100 100 100 100 100	
Total Larvae	332 332 332 332 332 332 332 332 333 332 333 333 333 333 333 333 333 333 333 333 333 333 333 333 333 333 333 333	
Percent Sorted		
Stand- ard Haul Factor	$\begin{array}{c} \mathbf{v}_{\mathbf{d},\mathbf{d},\mathbf{u}}\mathbf{u}_{\mathbf{d},\mathbf{u}}\mathbf{u}_{\mathbf{d},\mathbf{u}}\mathbf{u}_{\mathbf{d},\mathbf{d},\mathbf{u}}\mathbf{u}_{\mathbf{u}_{\mathbf{u}}\mathbf{u}_{\mathbf{u}}\mathbf{u}_{\mathbf{u}}\mathbf{u}_{\mathbf{u}}\mathbf{u}_{\mathbf{u}}\mathbf{u}_{\mathbf{u}}\mathbf{u}_{\mathbf{u}}\mathbf{u}_{\mathbf{u}}\mathbf{u}_{\mathbf{u}}\mathbf$	
Vol. Water Strained (cu. m)	0.000	
Tow Depth	2008 2009 2009 2008 2009 2009 2009 2009	
Time (PST)	00000000000000000000000000000000000000	
Tow Date Yr. mo. day	69 07 228 69 07	
Ship	666666666666666666666666666666666666666	
Long.(W)	122 53.1 123 11.7 123 11.7 123 11.7 123 11.7 122 24.0 122 26.0 122 26.0 122 26.0 123 12.0 123 12.0 121 12.0 122 12.0 123 12.0 123 12.0 121 12.0 122 12.0 123 12.0	
Lat.(N) deg. min.	337 547.5 337 547.0 337 547.0 337 547.0 337 547.0 338 557.0 338 557.0 348 557.0 357 557.0	
Station	0.000000000000000000000000000000000000	
ine		

CalCOFI Cruise 6907

Total Eggs	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	185
Total Larvae	1882 1883 1983 1984 1985 1986 1986 1986 1986 1986 1986 1986 1986	0
Percent Sorted		00
Stand- ard Haul Factor	munuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuu	!!!
Vol. Water Strained (cu. m)	55	1 CT
Tow Depth	22222222222222222222222222222222222222	0
Time (PST)	00000000000000000000000000000000000000	31
Tow Date yr. mo. day	69 07 21 66 69 07 21 66 69 07 21 66 69 07 21 66 69 07 22 1 65 69 07 22 1 65 69 07 22 1 65 69 07 22 1 65 69 07 22 1 65 69 07 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9 07 1
Ship	686666666666666666666666666666666666666	an On
Long. (W) deg. min.	120 0 3 3 5 5 5 1 1 1 1 2 1 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2	18 30.
Lat.(N) deg. min.	78100440011004444404 000000000000004400440	2 19.
Station	11220 1220	, LO
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	Total Eggs	23 23 23 24 25 25 25 25 25 25 25 25 25 25 25 25 25
	Total Larvae	112898999999999999999999999999999999999
	Percent Sorted	1000 1000 1000 1000 1000 1000 1000 100
	Stand- ard Haul Factor	WASHWASHWASHWASHWASHWASHWASHWASHWASHWASH
	Vol. Water Strained	0000 0000 0000 0000 0000 0000 0000 0000 0000
7.06	Tow Depth (m)	2000 2003 2003 2003 2004 2004 2004 2004
iise 6	Time (PST)	0730 11000 11000 11000 10125 00125 00125 00125 00233 10210 00245 00103 10100 10135 10100 10135 00220 00320 00315 00315
CalCOFI Cru	Tow Date yr. mo. day	69 07 111 69 07 111 69 07 111 69 07 111 69 07 112 69 07 112 69 07 112 69 07 112 69 07 112 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 113 69 07 114 69 07 114 69 07 114 69 07 114 69 07 114 69 07 114 69 07 115 69 07 115 69 07 114 69 07 114 69 07 115 69 07
	Ship	AXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
	Long.(W)	1118 51.0 1119 11.0 1120 15.0 120 15.0 121 34.5 121 34.5 122 14.0 123 35.0 124 54.5 117 06.9 117 06.9 117 15.8 117 27.6 118 50.5 119 52.5 119 52.5 119 52.5 119 6.5 111 49.0 111 49.0
	Lat.(N) deg. min.	32 08. 31 20.0 32 08. 31 149. 32 115. 32 10.0 30 30.0 30 30.0 30 30.0 31 120.0 31 120.0 31 120.0 32 15. 33 15. 33 15. 33 10. 34 15. 36 10. 37 10. 38 10. 38 10. 39 10. 30 20. 30 30. 30 30. 3
	Station	550.0 11200.0 1200.0
	Line	99999999999999999999999999999999999999

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Cruise	
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Total Eggs	20 1020 1020 1020 1020 1020 1030 10
Total Larvae	31 31 32 34 34 36 36 36 36 36 36 36 36 36 36
Percent Sorted	
Stand- ard Haul Factor	48888888888888888888888888888888888888
Vol. Water Strained (cu. m)	\$6000000000000000000000000000000000000
Tow Depth	22222222222222222222222222222222222222
Time (PST)	2200 00950 00950 00950 00950 00950 00950 00950 00950 00916
Tow Date yr. mo. day	69 07 115 69 07 115 69 07 115 69 07 115 69 07 115 69 07 115 69 07 115 69 07 115 69 07 115 69 07 115 69 07 116 69 07 117 69 07 118 69 07 119 69 07
Ship	**************************************
Long.(W) deg. min.	1116 41 1117 200.2 1117 200.2 1118 401.1 1118 401.1 1118 401.1 1118 101.2 1118 101.2 1118 101.2 1118 101.2 1118 101.2 1118 101.3 1118 101.
Lat.(N) deg. min.	229 250 250 250 250 250 250 250 250 250 250
Station	448890000000000000000000000000000000000
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	Total Eggs	7	146	מי	3	ഥ	228	- u	\cap \subset	α	27	46	9	9	-	0	0	438	<u>ب</u> د	30	200	,	32	16	\boldsymbol{c}	761	0	7	173	ى رى	ט ני ט ני	2
	Total Larvae	252	ے و	4 🗢	433	~ (91	117	90	$A \subset$) 4	283)	1				41		n u	> <		43					34	93	32	174	4CT
	Percent Sorted	00	100.0	000	00	00	000	000	000			000	000	00	00.	00	00	00.	00.	000			000	00	00	00.	00	00	00	000	000	00
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	Vol. Water Strained	630	277	621	621	622	628	198	242	200	600	6,50	170	227	581	619	643	601	581	195	300	411	199	639	651	139	177	623	601	642	649	D 2 Q
2069	Tow Depth	214	ω η 4 α	203	208	211	210	20	77	202	206	205	37	74	212	212	204	221	204	52	3 / C A L	200	214	208	207	31	57	202	206	206	203	017
Cruise	Time (PST)	20	1852	ر ا ا	02	34	83	50	42	77	2 0	30	ا ر ا ر	14	44	84	15	15	73	95	מעע	100	35	22	31	43	9	02	24	30	90	20
CalCOFI Cr	Tow Date yr. mo. day	9 07 2	69 07 22	2 70 6	9 07 2	9 07 2	9 07 2	9 07 2	9 07 2	7 0 0	700	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 00 0	9 07 2	9 07 2	9 07 2	9 07 2	9 07 2	9 07 2	9 07 2	7 10 6	2 70 6	0 00 0	9 07 2	9 07 2	9 07 2	9 07 2	9 07 2	9 07 2	9 07 2	9 07 2	9 07 2
	Ship	AX	YX X	AX	Y.	AX	AX	AX	AX	AX.	Y ?	5 2	\$ X	ĮŽ	AX	AX	AX	AX	AX	¥.	¥;	¥ ?	AX	AX	AX	AX	AX	AX	AX	AX	AX	AX
	Long.(W) deg. min.	17 49	114 36.0	14 59	15 10	15 31	16 09	14 02	14 06	77 51	14 40	70 CT	בול בו	13 28	13 49	14 07	14 26	14 45	15 23	12 40	12 44	13 07	07 61	EC PL	15 02	12 14	12 18	12 45	13 04	13 23	14 04	14 39
	Lat.(N) deg. min.	6 32.	27 26.0	. 24.	7 08.	5 58.	6 38.	6 57.	55.	41.	31.	6 24.	22.0	29.	6 18.	60 9	5 58.	5 49.	5 28.	6 08.	6 UI.	U U	144 144) L	Δ 5.2.	5 36.	5 34.	5 19.	5 10.	4 59.	4 38.	4 20.
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	Total	661 77 73 73 73 73 73 73 73 73 73	
	Total Larvae	213122 2 213122 2 213122 2 213122 2 21322 2 21322 2 2 2	
	Percent Sorted		
	Stand- ard Haul Factor	######################################	
	Vol. Water Strained	00000000000000000000000000000000000000	
806	Tow Depth	20088	
uise 6	Time (PST)	003430 00340 003430 00340 00340 00340 00340 00340 00340 00340 00340 00340 00340 00340 00340 00340 00340 00340 0034	
CalCOFI Crui	Tow Date yr. mo. day	66999999999999999999999999999999999999	
	Ship	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	
	Long.(W) deg. min.	1122 53 1122 53 1122 53 1122 53 1122 53 1122 54 1122 54 1122 54 1122 54 1122 54 1122 54 1123 55 1123 56 1124 56 1125 56 1127 54 1128 56 1129 5	
	Lat.(N) deg. min.	33 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
	Station	50.00 60	
	Line	660.00 660.00 660.00 660.00 660.00 660.00 660.00 660.00 660.00 660.00 660.00 660.00 770.00 770.00 770.00 770.00 770.00 770.00 770.00 770.00 770.00	

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	Total Eggs	2533 178 170 183 170 170 170 170 170 170 170 170 170 170	
	Total Larvae	20 39 65 1 1 2 8 3 3 6 6 2 1 1 8 8 3 3 6 6 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	Percent Sorted		
	Stand- ard Haul Factor	80000000000000000000000000000000000000	
	Vol. Water Strained (cu. m)	6000 6000 6000 6000 6000 6000 6000 600	
806	Tow Depth	222 222 222 222 222 222 222 223 223 223	
ise	Time (PST)	00000000000000000000000000000000000000	
CalCOFI Cru	Tow Date yr. mo. day	66999999999999999999999999999999999999	
	Ship	XX	
	Long. (W) deg. min.	122 172 173 188 0 0 122 188 0 0 122 188 0 0 1220 338 0 0 1220 337 0 0 1220 338 0 0 1220 337 0 0 1220 337 0 0 1220 337 0 0 1220 337 0 0 1220 337 0 0 1220 337 0 0 1220 337 0 0 1220 337 0 12	
	Lat.(N) deg. min.	332 24 6 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
	Station	0.000 0.000	
	Line S	77777777777777777777777777777777777777	

TABLE 1. (cont.)

Total	13 13
Total Larvae	6 7 14
Percent Sorted	100.0
stand- ard Haul Factor	2.89 3.01 2.76
Vol. Water Strained (cu. m)	659 658 671
Tow Depth	190 198 185
Time (PST)	1545 1045 0530
Tow Date yr. mo. day	70 60 69 70 60 69 70 60 69
Ship	AX AX
Long.(W) deg. min.	120 17.0 120 55.5 121 36.6
Lat.(N) deg. min.	31 32.0 31 09.0 30 52.5
Station	70.0 80.0 90.0
Line S	93.0 93.0 93.0

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	Total Eggs	1 1 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
	Total Larvae	20 1010 1010 1010 1010 1010 1010 1010 1
	Percent Sorted	
	Stand- ard Haul Factor	44444 444444 44444 44444 44444 <t< td=""></t<>
	Vol. Water Strained (cu. m)	00000000000000000000000000000000000000
שחש	Tow Depth (m)	11112 22222222222222222222222222222222
Cruise	Time (PST)	119955 119955 119955 119955 119955 119955 119955 119955 119955 119955 119955 119955 119955 119955 119955
Calcori Cru	Tow Date yr. mo. day	66999999999999999999999999999999999999
	Ship	AXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
	Long. (W) deg. min.	117 18.8 117 21.8 117 21.8 117 20.8 117 20.8 117 20.8 117 20.8 117 20.8 118 20.7 118 20.7 118 20.8 118 20.8 118 20.8
	Lat.(N) deg. min.	
	Station	78787878787878787878787878787878787878
	Line	

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	Total Eggs	200 1 2 4 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	Total Larvae	109 3 3 4 4 6 8 8 1 1 4 4 7 8 8 8 1 1 8 1 1 1 1 1 1 1 1 1 1 1 1 1
	Percent Sorted	
	Stand- ard Haul Factor	2128233332221222233332221856123202332222222222222222222222222222222
	Vol. Water Strained (cu. m)	66 66 66 66 66 66 66 66 66 66 66 66 66
6060	Tow Depth	1186 11993 11993 11993 12005 1
2	Time (PST)	00000000000000000000000000000000000000
Calcuri Crui	Tow Date yr. mo. day	66999999999999999999999999999999999999
	Ship	***************************************
	Long. (W) deg. min.	1119 20 1116 470.0 1116 202.0 1117 318.2 1117 318.2 1118 157.7 1118 157.7 1118 157.7 1118 157.7 1118 157.0 1118 157.0 1118 157.0 1118 157.0 1118 157.0 1119 157.0
	Lat.(N) deg. min.	28 52 52 52 52 52 53 52 53 52 53 52 53 54 55 54 55 54 55 54 55 54 55 54 55 54 55 54 54
	Station	8 W W 4 4 W 6 C S S S S S S S S S S S S S S S S S S
	Line	0.0000000000000000000000000000000000000

Line

		Percent		1000.00 1000.00 1000.00 1000.00 1000.00 1000.00 1000.00
		Stand- ard Haul Factor	40184660646	22000000000000000000000000000000000000
		Vol. Water Strained (cu. m)	6622 6633 668 668 668 668	5209 6134 6136 6136 6136 6136 610 610 610 610
	6069	Tow Depth	213 206 206 201 214 214 218 318	203 203 203 208 208 190 108 207 207 201 201 203
		Time (PST)	1020 0730 0730 0730 00455 00558 11035	1029 0435 0445 0045 0045 2200 1200 0324 0850 1338 1745 2210 1823 1510 1510
	CalCOFI Cruise	Tow Date r. mo. day	000000000	10 002 10 002 10 002 10 002 10 003 10 003 10 004 10 004 10 004 10 004
	Cal	TOW Yr.		
		Ship Code	XX AX A	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
		Long.(W) deg. min.		229.2 200.2
		bed.	1115 1115 1115 1115 1115 1115 1115 111	111111111111111111111111111111111111111
		Lat.(N) deg. min.	66 598. 66 598. 66 598. 66 593. 66 593.	26 29.5 26 18.8 25 18.8 25 59.0 25 59.0 25 49.0 25 54.5 25 34.0 25 30.0 25 10.0 27 38.9 28 38.9
		Station		30.0 440.0 540.0 500.0 500.0 500.0 600
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Total Eggs

Total Larvae

123.0 123.0 123.0 127.0 127.0 127.0 127.0 127.0 130.0 130.0 133.0 133.0 133.0 133.0 133.0 133.0 133.0 133.0

	Total Eggs	22 880 100 100 100 100 100 100 100
	Total Larvae	11 12 12 12 12 12 12 13 14 17 18 18 18 18 18 18 18 18 18 18 18 18 18
	Percent Sorted	
	Stand- ard Haul Factor	CUUUUUUUAUUUUUUUUUUUUUUUUUUUUUUUUUUUUU
	Vol. Water Strained (cu. m)	1147964 40000000 1000000000000000000000000000
0169	Tow Depth (m)	22000 22000 22000 22000 22000 22000 22000 22000 22000 22000 2200 22000 20000 2
se	Time (PST)	1000252 1000258 1000252 1000252 1000252 1000252 1000252 1000252 1000252 1000252 1000252 1000252 1000252 1000252 1000252 1000252 1000252 1000252 1000252 1000252 1000252
CalCOFI Crui	Tow Date yr. mo. day	6699100 100 6699100 100 669910 100 66910 100 66910 100 66910 100 6691
	Ship	666666666666666666666666666666666666666
	Long.(W) deg. min.	122 53.1 123 37.0 123 37.0 122 53.1 122 54.0 122 54.0 122 5.0 122 5.0 122 5.0 123 11.5 123 24.6 123 25.0 123 26.0 123 26.0
	Lat.(N) deg. min.	337 337 337 337 337 337 337 337
	Station	800.00 800.00
	Line S	66000000000000000000000000000000000000

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Cruise
CalCOFI

	Total Eggs	1 100 100 100 100 100 100 100 100 100 1
	Total Larvae	1033 1033 1033 1033 1033 1033 1033 1033
	Percent Sorted	
	Stand- ard Haul Factor	8000000000000000000000000000000000000
	Vol. Water Strained (cu. m)	66999953200559999533200996699953320099669999533200999999999999999999999999999999
910	Tow Depth	22009999999999999999999999999999999999
ise 6	Time (PST)	231 231 232 2323 2323 2323 2323 2323 23
CalCOFI Cru	Tow Date yr. mo. day	699 100 220 699 100 220 699 100 220 699 100 220 100 220 100 220 100 220 100 221 100 22
	Ship Code y	666666666666666666666666666666666666666
	Long.(W) deg. min.	123 33 33 32 1220 332 33 33 33 33 33 33 33 33 33 33 33 33
	Lat.(N) deg. min.	332 239 25 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	tation	11100000000000000000000000000000000000
	Line S	77 00 00 00 00 00 00 00 00 00

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	Total Eggs	9123 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
	Total Larvae	7
	Percent Sorted	00000000000000000000000000000000000000
	Stand- ard Haul Factor	### ### ##############################
	Vol. Water Strained (cu. m)	6611 6614 6613 6618 6618 6618 6618 6618 6618 6618
6910	Tow Depth	22001 2001 2001 2001 2001 2001 2001 200
Cruise	Time (PST)	1701 17101 1
CalCOFI Cr	Tow Date yr. mo. day	69 100 22 66 69 100 22 66 69 100 22 60 100 22 60 100 22 60 100 22
	Ship	866666666666666666666666666666666666666
	Long.(W) deg. min.	1118 52.5 1120 344.5 1121 344.5 1122 344.5 1122 344.5 1117 044.5 1117 12.4 44.5 1117 12.7 44.5 1118 48.2 1120 10.0 1118 48.2 1120 10.5 1118 48.2 1120 10.5 1130 10.5 1130 10.5 114 45.6 115 45.6 116 45.0 118 05.2 118 05.2 118 05.2 118 05.2
	Lat.(N) deg. min.	332 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	Station	0.000000000000000000000000000000000000
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	Total Eggs	2
	Total Larvae	100000
	Percent Sorted	
	Stand- ard Haul Factor	E E S S E S E S S E S S E S S E S S E
	Vol. Water Strained (cu. m)	7000 7000 7000 7000 7000 7000 7000 700
0169	Tow Depth (m)	220047 74 5 7 1 1 2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2
lise (Time (PST)	11730 11730 118425 1118425 110925 110925 11355 110923 110923 110923 110923 110923 110923 110923 110923 110923 110923 110923 110923 110923
CalCOFI Cru	Tow Date yr. mo. day	69 10 27 69 10 28 69 10 28 69 10 28 69 10 28 69 10 28 69 10 30 69 10 30 69 10 31 69 10 31 60 31
	Ship	AXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
	Long.(W) deg. min.	1116 42.3 1117 221.8 1117 221.8 1118 011.4 1118 011.4 1118 111.0 1116 199.7 1116 199.7 1116 199.7 1116 199.7 1116 199.7 1117 138.0 1118 199.5 1118 199.5 1118 199.5 1118 199.7 1118 199.7 1118 199.8 1119 199.8 119
	Lat.(N) deg. min.	30 113
	Station	44000000000000000000000000000000000000
	Line	00000000000000000000000000000000000000

CalCOFI Cruise 6910

Total Eggs	235 237 237 237 237 237 237 237 237 24 260 27 27 27 27 27 27 27 27 27 27 27 27 27
Total Larvae	156 121 221 70 38 36 36 33 31 117 117 117 118 50 109 109 422
Percent Sorted	1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0
Stand- ard Haul Factor	23322022222222222222222222222222222222
Vol. Water Strained	634 630 630 630 630 630 645 644 668 665 665 665 665 665 665 665 665 665
Tow Depth	210 598 1995 1995 1995 1995 1996 1996 1997 1997 1998 1998 1998 1998 1998 1998
Time (PST)	2215 0405 0500 0500 0625 00625 00625 00626 11532 11532 11532 11533 11530 00448 00237 00237 00237 11245 00337 00337 00337 00337 00337 00337 00337 00337 00337 00337 00337
Tow Date yr. mo. day	69 111 03 69 111 03 69 111 03 69 111 03 69 111 04 69 111 04 69 111 04 69 111 05 69 111 05 69 111 05 69 111 05 69 111 07 69 111 07
Ship	YXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Long.(W) deg. min.	117 49.0 1114 36.2 1114 39.9 1115 10.6 1115 10.6 1116 15.5 1114 06.1 1113 28.6 1113 28.8 1112 48.7 1112 24.0 1113 26.6 1113 26.6 1113 26.0 1113 26.0 1113 26.0 1113 26.0 1113 26.0 1113 26.0 1113 26.0 1113 26.0 1113 26.0 1113 19.4 1113 19.4
Lat.(N) deg. min.	26 32.32 27 226 32.32 27 226 32.32 27 226 32.32 26 36.11 26 557.8 26 557.8 27 55 56 56 56 56 56 56 56 56 56 56 56 56
Station	880.0 98
Line S	220.0 2233.0 2233.0 2233.0 2277.0 2277.0 2277.0 330.0 330.0 331.0 337.0 337.0

CalCOFI Cruise 6912

	Total	27	07
	Total Larvæe	8 8 8 17726 17726 1772 1774 1774 1774 1774 1774 1774 1774	CT
	Percent Sorted		00.
	Stand- ard Haul Factor		ي.
	Vol. Water Strained	241 5241 6426 6426 6426 6426 6426 6426 6426 6426 6427 6426 6	
7760	Tow Depth	2000 2000 2000 2000 2000 2000 2000 200	20
ciuse	Time (PST)	11350 007058 007058 007058 001010 0010 0010 001010 0010 001010 001010 001010 001010 001010 001010 001010 001010 001010 001010 001010 001010 001010 001010 001010 001010 001010 001010 00	12
carcori cru	Tow Date yr. mo. day	66999999999999999999999999999999999999	9 11 2
	Ship Code	ZXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	¥
	Long.(W) deg. min.	1233 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	22 15.
	Lat.(N) deg. min.	33.4 53.0 33.4 53.4 53.4 53.4 53.4 53.4 53.4 53.4	4 23.
	Station	10000000000000000000000000000000000000	0
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Total Eggs	122 122 132 14 14 15 16 16 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18
Total Larvae	138 138 148 152 168 168 168 168 168 168 168 168 168 168
Percent	
Stand- ard Haul Factor	33333333333333333333333333333333333333
Vol. Water Strained (cu. m)	00000000000000000000000000000000000000
Tow Depth	1008 1008 1008 1009 1009 1009 1009 1009
Time (PST)	00115 00111300 0011300 00224 00224 00224 002334 002334 002334 002334 002334 002334 002334 002334 002334 002334 002334 002334 002334 002334 002334 002334
Tow Date	699 111 25 699 111 25 690 111 25 691 12 29 691 12 29 691 12 29 691 12 29 691 12 29 691 12 29 691 12 29 692 111 29 693 112 29 693 113 30 693 113 30 694 115 29 695 117 29 696 117 29 697 117 29 698 117 29 698 117 29 699 117 29 690 117 29 691 117 29 691 12 29 691 12 29 691 12 29 691 12 20 693 12 20 693 12 20 694 12 20 695 12 20 696 12 20 697 12 20 697 12 20 698 12 20 698 12 20 698 12 20 699 13 30 698 12 20 699 13 30 699 12 20 699 12 20 690 12 20 690 12 20 690 12 20 690 12 20 690 12 20 690 12 20
Ship	***************************************
Long.(W)	122 35.6 123 326.9 120 336.9 120 336.9 121 30.0 122 32.0 123 132.2 123 132.2 120 24.5 120 24.5 121 22 24.0 122 24.0 123 133.2 123 24.0 124 24.0 125 24.0 127 24.0 128 25.0 129 39.0 120 21.5 120 21.5 121 25.0 122 24.0 123 13.0 124 13.0 125 13.0 127 13.0 127 13.0 128 13.0 127 13.0 128 13.0 129 13.0 120 13.0 121 13.0 122 13.0 123 13.0 124 13.0 125 13.0 127 13.0
Lat.(N) deg. min.	3322 2393 339 339 339 339 339 339 339 33
Station	88000000000000000000000000000000000000
Line	777 0.0000 0.0000 0.0000 0.0

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(cn · m)	672 650 664 681	697 664 133	147	658 638 880	655 643 663	674 720	687 317	689	600 600 600 600	676	692 699	713	673 673 663	680 652	668 643	633 692	134 446 500	671 646	099
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TABLE 2. Pooled occurrences of fish larvae taken during CalCOFI cruises in 1969.

Rank	Taxon	Occurrences
1	Engraulis mordax	880
2	Protomyctophum crockeri	717
3	Sebastes spp.	705
4	Citharichthys spp.	611
5	Triphoturus mexicanus	556
6	Lampanyctus spp.	550
7	Leuroglossus stilbius	498
8	Vinciguerria lucetia	479
9	Sternoptychidae	469
10	Disintegrated fish larva	458
11	Unidentified fish larva	422
12	Stenobrachius leucopsarus	390
13	Merluccius productus	361
14	Bathylagus ochotensis	359
15	Cyclothone spp.	346
16	Melamphaes spp.	333
17	Myctophidae	329
18	Bathylagus wesethi	328
19	Tarletonbeania crenularis	277
20	Citharichthys stigmaeus	269
21	Trachurus symmetricus	248
22	Lestidiops ringens	231
23	Bathylagus spp.	215
24	Stomias atriventer	214
25	Diogenichthys laternatus	210
25	Diogenichthys atlanticus	210
27	Icichthys lockingtoni	202
28	Sciaenidae	195
29	Chauliodus macouni	189
30	Symbolophorus californiensis	157
31	Lampanyctus ritteri	155
32	Ceratoscopelus townsendi	153
33	Gobiidae	138
34	Gonostomatidae	126
35	Idiacanthus antrostomus	114
36	Diaphus spp.	110
37	Argentina sialis	98
38	Scopelarchidae	93
39	Hygophum atratum	81
40	Bathylagus pacificus	80
40	Parophrys vetulus	80
40	Trachipteridae	80
43	Sardinops sagax	79
43	Diogenichthys spp.	79
45	Microstoma microstoma	73
46	Serranidae	72
47	Symphurus spp.	71
48	Pleuronichthys verticalis	66

TABLE 2. (cont.)

Rank	Taxon	Occurrences
49	Lyopsetta exilis	65
50	Hypsoblennius spp.	61
51	Paralichthys californicus	60
52	Myctophum nitidulum	59
53	Oxyjulis californica	58
54	Microstomus pacificus	56
55	Synodus spp.	54
55	Chromis punctipinnis	54
57	Hippoglossina stomata	52
58	Clinidae	51
59	Tetragonurus cuvieri	48
59	Gonichthys tenuiculus	48
61	Sebastolobus spp.	47
62		45
62	Ophidiiformes	
	Peprilus simillimus	45
64	Chiasmodontidae	41
65	Cottidae	40
65	Nansenia crassa	40
67	Scopelosaurus spp.	36
68	Ichthyococcus spp.	34
68	Ophidion scrippsae	34
70	Bathylagus milleri	33
71	Cololabis saira	32
71	Nansenia candida	32
73	Sarda chiliensis	30
73	Ceratioidei	30
75	Notoscopelus resplendens	29
76	Chilara taylori	28
76	<i>Halichoeres</i> spp.	28
78	Poromitra spp.	27
79	Scomber japonicus	24
79	Scorpaenichthys marmoratus	24
81	Trichiuridae	23
81	Lampadena urophaos	23
83	Xystreurys liolepis	22
84	Oxylebius pictus	20
85	Zaniolepis spp.	19
85	Prionotus spp.	19
85	Lampanyctus regalis	19
88	Notolepis risso	18
89	Scopelogadus bispinosus	17
89	Cyclopteridae	17
91	Brosmophycis marginata	16
92	Glyptocephalus zachirus	15
92	Sphyraena argentea	15
92	Pleuronichthys coenosus	15
95	Psettichthys melanostictus	14
95	Macrouridae	14
97	Anguilliformes	13
97	Hygophum spp.	13
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TABLE 2. (cont.)

Rank	Taxon	Occurrences
99	Medialuna californiensis	12
99	Scorpaena spp.	12
99	Brama spp.	12
102	Macroramphosus gracilis	11
102	Loweina rara	11
102	Pleuronichthys decurrens	11
102	Aristostomias scintillans	11
106	Hygophum reinhardtii	10
106	Syngnathus spp.	10
106	Notolychnus valdiviae	10
109	Protomyctophum thompsoni	9
109	Etrumeus acuminatus	9
109	Seriola lalandi	9
109	Agonidae	9
113	Semicossyphus pulcher	8
114	Diplophos taenia	7
114	Electrona rissoi	7
114	Pleuronectiformes	7
114	Pleuronichthys ritteri	7
114	Girella nigricans	7
119	Paralepididae	6
119	Hypsopsetta guttulata	6
119	Hexagrammidae	6
122	Eutaeniophoridae	5
122	Atherinidae	5
122	Exocoetidae	5
125	Haemulidae	4
125	Tactostoma macropus	4
125	Blennioidei	4
125	Howella brodiei	4
125	Stomiiformes	4
125	Gerreidae	4
131	Carangidae	
132	Centrobranchus spp.	3 2
132	Physiculus spp.	2
132	Scombridae	2
132	Auxis spp.	2
132	Caulolatilus princeps	2
132	Porichthys spp.	2
132	Scopeloberyx robustus	2
132	Bathophilus spp.	2
140	Osmeridae	1
140	Gobiesocidae	1
140	Gempylidae	1
140	Stemonosudis macrura	ī
140	Pleuronichthys spp.	1
140	Astronesthidae	ī
140	Vinciguerria poweriae	1
140	Parvilux ingens	1
140	Ophiodon elongatus	1
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TABLE 2. (cont.)

Rank	Taxon	Occurrences
140	Nomeidae	1
140	Coryphaena hippurus	1
140	Dolichopteryx spp.	1
140	Icosteus aenigmaticus	1
140	Lepidopsetta bilineata	1

TABLE 3. Pooled numbers of fish larvae taken during CalCOFI cruises in 1969. Counts are adjusted for percent of sample sorted and standard haul factor (see text).

Rank	Taxon	Count
1	Engraulis mordax	468352
2	Sebastes spp.	86545
3	Leuroglossus stilbius	55312
4	Vinciguerria lucetia	49462
5	Merluccius productus	47105
6	Triphoturus mexicanus	22844
7	Stenobrachius leucopsarus	20698
8	Sciaenidae	13413
9		10217
10	Citharichthys spp.	
	Trachurus symmetricus	7718
11	Bathylagus ochotensis	6639
12	Bathylagus wesethi	6212
13	Protomyctophum crockeri	5564
14	Cyclothone spp.	4509
15	Unidentified fish larva	4448
16	Lampanyctus spp.	4200
17	Bathylagus spp.	3777
18	Disintegrated fish larva	3757
19	Diogenichthys laternatus	3685
20	Sardinops sagax	3093
21	Sternoptychidae	2982
22	Tarletonbeania crenularis	2801
23	Myctophidae	2778
24	Citharichthys stigmaeus	2485
25	Synodus spp.	2120
26	Melamphaes spp.	1775
27	Diaphus spp.	1758
28	Diogenichthys atlanticus	1646
29	Ceratoscopelus townsendi	1623
30	Lampanyctus ritteri	1585
31	Argentina sialis	1457
32	Stomias atriventer	1448
33	Parophrys vetulus	1435
34	Icichthys lockingtoni	1315
35	Lestidiops ringens	1234
36	Symbolophorus californiensis	918
37	Chauliodus macouni	900
38	Sarda chiliensis	874
39	Chromis punctipinnis	789
40	Oxyjulis californica	762
41	Gobiidae	748
42	Serranidae	692
43	Idiacanthus antrostomus	643
44	Hygophum atratum	532
45	Gonostomatidae	513
46	Paralichthys californicus	497
47	Symphurus spp.	470
4/	<i>ովահագոր</i> Ձիհ.	4 / 0

TABLE 3. (cont.)

Rank	Taxon	Count
48	Scopelarchidae	444
49	Bathylagus pacificus	438
50	Prionotus spp.	384
51	Ophidiiformes	372
52	Hypsoblennius spp.	364
53	Peprilus simillimus	348
54	Lyopsetta exilis	347
55	Diogenichthys spp.	343
56	Scomber japonicus	322
57	Pleuronichthys verticalis	319
58	Trachipteridae	286
59	Tetragonurus cuvieri	280
60	Seriola lalandi	270
60	Gonichthys tenuiculus	270
62	Nansenia candida	267
63	Clinidae	266
64	Microstoma microstoma	261
65	Myctophum nitidulum	256
66	Hippoglossina stomata	239
67	Microstomus pacificus	236
68	Sebastolobus spp.	233
69	Ophidion scrippsae	208
70	Cottidae	200
71	Notoscopelus resplendens	183
72	Etrumeus acuminatus	182
73	Nansenia crassa	173
74	Ceratioidei	168
75	Halichoeres spp.	165
76	Chiasmodontidae	164
77	Lampadena urophaos	149
78	Xystreurys liolepis	148
78	Scopelosaurus spp.	148
80	Lampanyctus regalis	140
81	Cololabis saira	134
82	Trichiuridae	125
83	Ichthyococcus spp.	124
84	Anguilliformes	118
85	Bathylagus milleri	113
86	Chilara taylori	102
87	Scorpaena spp.	101 93
88	Scorpaenichthys marmoratus	
89	Poromitra spp.	87 81
90	Hexagrammidae	77
91 92	Sphyraena argentea Scopelogadus bispinosus	77
93	Glyptocephalus zachirus	73
94	Oxylebius pictus	69
95	Notolepis risso	64
95	Zaniolepis spp.	64
30	ranioichia shh.	04

TABLE 3. (cont.)

Rank	Taxon	Count
97	Blennioidei	62
98	Psettichthys melanostictus	61
99	Pleuronichthys coenosus	57
100	Brosmophycis marginata	55
101	Pleuronectiformes	52
101	Paralepididae	52
103	Macrouridae	49
103	Macroramphosus gracilis	49
103	Cyclopteridae	49
103	Medialuna californiensis	49
107	Hygophum reinhardtii	48
108	Girella nigricans	47
109	Loweina rara	45
109	Brama spp.	45
111	Protomyctophum thompsoni	44
112	Hygophum spp.	41
112	Notolychnus valdiviae	41
112	Pleuronichthys ritteri	41
112	Aristostomias scintillans	41
116	Pleuronichthys decurrens	38
117	Semicossyphus pulcher	36
118	Exocoetidae	35
119	Syngnathus spp.	34
119	Gerreidae	34
121	Hypsopsetta guttulata	32
122	Diplophos taenia	28
123	Agonidae	27
124	Atherinidae	25
125	Electrona rissoi	22
126	Lepidopsetta bilineata	21
126	Howella brodiei	21
128	Haemulidae	20
129	Stomiiformes	16
130	Eutaeniophoridae	15
131	Tactostoma macropus	14
132	Carangidae	11
133	Bathophilus spp.	9
134	Centrobranchus spp.	7
135	Auxis spp.	6
135	Physiculus spp.	6
135	Scombridae	6
135	Scopeloberyx robustus	. 6
139	Caulolatilus princeps	5
140	Porichthys spp.	4
140	Parvilux ingens	4
142	Coryphaena hippurus	
142	Nomeidae	3 3 3
142	Pleuronichthys spp.	3
142	Vinciguerria poweriae	3
-		

TABLE 3. (cont.)

Rank	Taxon	Count
142	Osmeridae	3
142	Ophiodon elongatus	3
142	Astronesthidae	3
142	Icosteus aenigmaticus	3
142	Dolichopteryx spp.	3
142	Gempylidae	3
142	Gobiesocidae	3
142	Stemonosudis macrura	3
	Total	875854

TABLE 4. Numbers of fish larvae taken on stations occupied during CalCOFI cruises in 1969. Counts are adjusted for percent of sample sorted and standard haul factor (see text). Average number is given for stations occupied twice during a single month. Unoccupied stations are indicated by a dash.

	DEC.	0000000000	DEC.	000 0000	DEC.	000000000000
	NOV.	000000000000000000000000000000000000000	NOV.	0000000	NOV.	
	OCT.	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	OCT.	18.1 15.9 0.0 42.3 50.0 22.2	OCT.	000000000000
	SEP.	00000111111	SEP.	0.0111111	SEP.	000000000000000000000000000000000000000
	AUG.		AUG.	111111	AUG.	11111111111
S	JULY	3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	JULY	17.0 0.0 0.0 0.0 0.0 0.0	JULY	27.5 0.0 0.0 0.0 27.5 3.1 0.0 0.0 0.0 0.0 0.0
Anguilliformes	JUNE	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	JUNE	11.4 0.0 0.0 0.0 0.0 0.0 0.0	! =	4.000000
Anguil	MAY	Etrumeus	MAY	Sardinops	MAY	000000000000000000000000000000000000000
	APR.	0.0 0.0 0.0 0.0 0.0 0.0 0.0	APR.	 #000000	APR.	000000000000000000000000000000000000000
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	FEB.	00000	FEB.	1111111	FEB.	10. 10. 10. 10. 10. 10. 10. 10. 10. 10.
	JAN.	0.0000000000000000000000000000000000000	JAN.	0	JAN.	000000000000
	Z	140.0 32.0 55.0 35.0 40.0 22.0 35.0	Z	23.0 22.0 23.0 23.0 22.0 23.0	Z	33.0 32.0 32.0 32.0 32.0 32.0 440.0 59.0 67.0
	STATION	90.0 97.0 100.0 110.0 120.0 130.0 133.0 137.0	STATION	130.0 130.0 130.0 133.0 133.0	STATION	87.0 87.0 87.0 90.0 90.0 97.0 97.0 100.0 100.0

TABLE 4. (cont.)

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(cont.)	JULY	182 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	•
mordax	JUNE	111.5 11.5 17.5 64.9 64.9 64.9 64.9 64.9 64.9 64.9 64.9 64.9 10.0 10.0 10.0 10.0 10.0 11.4 13.2 13.2 13.2 14.3 13.3	3
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TABLE 4. (cont.)

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TABLE 4. (cont.)

				Arger	Argentina s	ialis	(cont.)					
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37.0 35.	1	ı			1			t	I			
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TABLE 4. (cont.)

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(:	AUG.		AUG.	00000
(cont.)	JULY	3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	JULY	00000
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dicrost	APR.	00000000000000000000000000000000000000	APR.	
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	FEB.		FEB.	0.00 40.00 0.00 0.00 0.00 0.00 0.00 0.0
	JAN.	00000000000000000000000000000000000000	JAN.	24428 0000 888401 0000
	ON	70.0 80.0 100.0 70.0 70.0 100.0	NO	50.0 50.0 100.0 60.0 90.0 70.0
	STATIO	87.0 87.0 990.0 990.0 993.0 993.0 97.0 97.0 100.0 103.0 1110.0	TATI	60.00 60.00 60.00 60.00 60.00 60.00 70.00

TABLE 4. (cont.)

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	AUG.	000000001111111	AUG.	
cont.)	JULY	00000000000000000000000000000000000000	JULY	000000000000000000000000000000000000000
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	JAN.	100000000000000	JAN.	000000000000000000000000000000000000000
	Z	110 80 90 90 90 90 90 100 100 100 10		
	STATION	70.0 73.0 77.0 80.0 83.0 83.0 83.0 87.0 90.0 90.0 93.0	STATION	103.0 1100.0 1100.0 1100.0 1100.0 1100.0 1113.0 1117.0 1120.0 1120.0 1123.0 1123.0 1123.0 1123.0 1123.0

TABLE 4. (cont.)

					Nansenia		crassa ((cont.)		 			1
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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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s (cont.	JULY	0.0 0.0 2.7 0.0 0.0 4.3 0.0 4.3 0.0 0.0	JULY	2 2 2 3 3 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3
Bathylagus pacificus	JUNE		כוו	
lagus p	MAY	nathulanne	MAY	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
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	FEB.	0.00	FEB.	
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(cont.)

Bathylagus wesethi

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Leuroglossus stilbius (cont.)

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5.0 60.0 4.8 2 7.3 0.0 7.0 35.0 40.9 4.886.0 363.1 7.3 0.0 7.0 45.0 869.8 634.6 6.4 0.0 0.0 0.0 7.0 55.0 980.4 1203.7 100.2 17.3 0.0 7.0 60.0 278.5 95.8 35.4 3.7 6.7 0.0 7.0 60.0 278.5 95.8 35.4 3.7 6.7 0.0 7.0 60.0 142.1 209.4 19.7 0.0 0.0 7.0 186.3 151.3 142.0 2.9 0.0 0.0 7.0 198.2 895.1 142.0 2.9 0.0 0.0 7.0 104.5 962.3 142.0 2.9 0.0 0.0 8.0 104.5 962.3 142.0 0.0 0.0 0.0 9.0 104.5 144.5 145.0 2.9<	3.0 90.		2	1			i			ı			ı
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$3.0 \ 30.0 \ 29.3 \ 1935.5 \ - 265.6 \ 22.5 \ - 0.0 \ - 0.$ $3.0 \ 35.0 \ 0.0 \ 715.7 \ - 103.7 \ 66.4 \ - 8.4 \ - 0.$ $3.2 \ 826.2 \ - 18.6 \ 29.7 \ - 0.0 \ - 0.$ $3.0 \ 45.0 \ 96.7 \ 447.8 \ - 285.5 \ 25.7 \ - 6.4 \ - 0.$	3.0 28.	10.	158.	1	81.	4	ı		ı			ı	0
$3.0 \ 35.0 \ 0.0 \ 715.7 \ - 103.7 \ 66.4 \ - 8.4 \ - 0.3.0 \ 40.0 \ 3.2 \ 826.2 \ - 18.6 \ 29.7 \ - 0.0 \ - 0.3.0 \ 45.0 \ 96.7 \ 447.8 \ - 285.5 \ 25.7 \ - 6.4 \ - 0.$	3.0 30.	29.	935.	ı	65.	2	ŧ		I		0.0	I	200
$3.0 \ 40.0 \ 3.2 \ 826.2 \ - \ 18.6 \ 29.7 \ - \ 0.0 \ - \ 0.3.0 \ 45.0 \ 96.7 \ 447.8 \ - \ 285.5 \ 25.7 \ - \ 6.4 \ - \ 0.$	3.0 35.	0.0	15.	ı	03.	ه څ	ı		ı	•		l	0 0
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				Leuroglossus		stilbius	(cont.)	•		1		
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3.0 50	0 10	81		159.3	27.4		3.0	ı	2.8	0.0	t I	0.0
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7.0 35	0 0	18.	ı		ı	10.2		ı			ı	0
7.0 40	0 0.	22.	1	4	ı			ı			ı	0
7.0 45	0	29.	ı	4.	ı	0.6	0.0	ı			ı	0
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03.0 50	0 0	0	ı	6.	ı	0.0		ı			ı	0
03.0 70	0 0.	9	1	0	ı			ı			1	50
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07.0 40	0.0	22.	ı		ı			1 1			ı	
07.0 45	0.0	°°	ŀ		I	0	•	1		•	ı	
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07.0 55	0	•	ı		1	0		1 1			1	
07.0 60	•	, ,	t					. 1			ı	
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10.0			ı	e co	1	0.0	0.0	ı			1	
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			•	Leuroglossus		stilbius	s (cont.	E.)				
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13.0 40.			ι		1		0.0	ł			1	
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13.0 50.		9	ı		ı			1			ı	
113.0 60.0	0.0	0.0	ı	38.9	ı	0.0	0.0	ı	0.0	0.0	ı	0.0
17.0 30.		4	ı		ŧ	6	0	ı			1	- 0
17.0 35.		-	ı		į			ı			ı	
17.0 40.		6	1		ı	- 8		ı			ł	
17.0 45.		32.	1	0	ı			ŀ			0.0	
17.0 50.		7.	ı		ı			ı		1		
17.0 60.		0	1		ı			1		1		
18.0 39.			ı		ı	0		1		0.0		
19.0 33.		0	1		ı	0		ı			ı	
20.0 40.					ı			ı		1	0.0	
20.0 45.		ı			ı			ı		ı	0.0	
20.0 50.		ı			1			ı		ı		
23.0 36.		ı			ı			ı		ı		
23.0 37.	I	ı		- 0	١			1		1		
23.0 42.	1	ı			1			1		ŧ		
23.0 45.	ı	ı			ł			ı		t		
23.0 50.	١.	i			ı			ı				
27.0 40.	ı	ı			ı			I	ı			
27.0 45.	1	í			ı			ı	ı			
27.0 50.	I	ı			ı			1	t			
30.0 35.	ı	ı			ı	2.7		I	I		0	
30.0 40.	I	ı			ı			I	ı			
33.0 35.	J	I			ı			I	ı		0	
33.0 40.	ł	I			ı	0.0		I	ı			
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3/.0 33.	ı	ı			I	J.5		ı	1			6
				D	Dolichopteryx		spp.					
TAT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
93.0 60.0	3.4	0.0		0.0	0.0		0.0		0.0	0.0		0.0
					Osm	Osmeridae						
STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
60.0 52.0	0.0	0.0			2.7		0.0	0.0	ı	0.0	0.0	ı
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TABLE 4. (cont.)

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 	NOV.	0.0		NOV.		0.0				0 0		6	- 4	. w								0.0	•		0.0					0.0	•	I
	OCT.	0.00		OCT.		000	0			0 0				0.0	ı	1 1				0		7.5			0.0					0.0		
	SEP.	0.0		SEP.	1 1	1 1	1 1	ı	1 1	1	ı	1 1		ı	ŀ	FI	1	ı	ŀ	! #	ı	l	1 1	1 1	1	1	ı	ı	ı	ł I	0.0	
	AUG.	0.0111		AUG.		00.					0.0	0		0.0									0) M)					•	ł
	JULY	5.9 0.0 0.0	91	JULY		0.0			0.0	0 0				0.0	ı	1 1						0.0			0.0	•						
Stomiiformes	JUNE	0.0	Gonostomatidae	JUNE	1 1	1 1	1 1	1	1	1 1	ı	l	I 1	I	ı	1 1	1 1	1	I	1 1	1	1	i	l	1 1	ı	ı	ł	ı	l i	1	ı
Stomi	MAY	0.00	Gonost	MAY	1 1	00.0			0.0	0 0	•	0.0					0 (6	0 0		0			•				0.0		
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	MAR.	0.0		MAR.	1 1	1 1	ı	1 1	ı	1 1	ı	I	1 1	1 1	ı	I	1 1	ı	1	I	1 1	ı	ì	I	1 1	1	1	I	1	1 1	1	ł
	FEB.	000		FEB.	3.1						0 0		•								6 1						•			0.0	8 6	
	JAN.	0.00		JAN.	ł.	0.0								0.0		ı		0 0				0.0				ø				0.0	0 0	0
	Z	90.0 70.0 60.0		NO	90.06	0.0	0	N C	0	٠ د	. 0	0	٠.	50	75.	0	LU.	0	0	0.	٠ د	0	0	0	٠ د		0	0	0.	00		5
	STATION	77.0 87.0 93.0 133.0		TAT	53.0	00	0	25		- '		7.		0	0	0	٠ ۲	 M	8	m i		7:	7		; :		0	0.	0	. ი	7	7

	DEC.	
	NOV.	00
	OCT.	OOOMOOOMOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
	SEP.	000000000000000000000000000000000000
	AUG.	
cont.)	JULY	
)	JUNE	00000000000000000000000000000000000000
Gonostomatidae	MAY	
Gon	APR.	ON OOOOOO MOOOOOOOOOOOOOOOOOOOOOOO
	MAR.	
	FEB.	
	JAN.	
	NO	NO
	STATIO	00000000000000000000000000000000000000

TABLE 4. (cont.)

1 1 1 1	DEC.	000000000000000000000000000000000000000	DEC.	0.00
 	NOV.	11111100001000	NOV.	10000000000000000000000000000000000000
 	OCT.	000000 000	OCT.	1000 1000 1000 1000 1000 1000 1000 100
	SEP.	00000000000111	SEP.	111111111111111111111111111111111111111
	AUG.		AUG.	000000000000000000000000000000000000000
(cont.)	JULY	Ø	JULY	16.9 16.9 16.9 16.9 16.9 16.9 16.9 16.9
idae (JUNE	- 0.0 - 0.0	JUNE	
Gonostomatidae	MAY	cyclot	MAY	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
Gon	APR.	0.0000000000000000000000000000000000000	APR.	100.00 0.00 0.00 0.00 0.00 0.00
	MAR.	003223111111111	MAR.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	FEB.	000000000111111	FEB.	3.2 0.0 0.0 1.8 1.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
	JAN.	m000m0m000011111	JAN.	16000000000000000000000000000000000000
	NO	80.00 80.00 70.00 70.00 80.00 80.00 80.00 80.00 80.00 80.00	NO	100.0 90.0 90.0 80.0 90.0 110.0 60.0 60.0 70.0 80.0 80.0 90.0 65.0 70.0 80.0 90.0
	TAT	110.0 1113.0 1113.0 1113.0 1113.0 1117.0 1120.0 1120.0 1133.0	TATI	53.0 67.0 67.0 67.0 70.0 70.0 73.0 73.0 73.0 73.0 73.0 7

72.0 73.0 Cyclothone spp. (cont.) 0. JAN. STATION

DEC.	
NOV.	335.00 11000 1000 1000 10000 1
OCT.	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
SEP.	22 9 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
AUG.	
JULY	40000000000000000000000000000000000000
JUNE	160.00 17.90 17.90 17.90 10.00 1
MAY	
APR.	121 121 121 121 121 121 121 121 121 121
MAR.	000000000000000000000000000000000000000
FEEB.	40112 40122 60100000000000000000000000000000000
JAN.	1196 1196 1200 1200 1200 1200 1200 1200 1200 120
ON	44000000000000000000000000000000000000
TAT	107.0 107.0

TABLE 4. (cont.)

9 8 1	DEC.	0.00		DEC.	0000101	1	DEC.	
 	NOV.	0.00 0.00 4.00 0.00		NOV.	0.0 0.0 3.1 3.1		NOV.	000000
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 	SEP	1111		SEP.	9.2		SEP.	000m000m00mmm0000000000000000000000000
	AUG.	1111		AUG.	111111		AUG.	
(cont.)	JULY	3.5 0.0 7.2 3.2 16.0	ia	JULY	0.00000	spp.	JULY	
spp.	JUNE	6.0 0.0 0.0 0.0	os taenia	JUNE	000000		JUNE	000000000000000000000000000000000000000
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	MAR.	300 mm		MAR.	000000		MAR.	900.
	FEB.	1111		FEB.			FEB.	wowowoooooooooooooooooooooooooooooooo
	JAN.	1 1 1 1 1		JAN.			JAN.	000000000000000000000000000000000000000
		60.0 35.0 60.0 60.0		Z	90.0 60.0 60.0 50.0 35.0		N	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
	STATION	130.0 133.0 133.0 133.0		STATION	120.0 123.0 127.0 130.0 133.0		STATION	93.0 100.0 100.0 1003.0 103.0 107.0 107.0 110.0 1113.0 117.0 117.0 117.0

TABLE 4. (cont.)

	DEC.	0.000	DEC.	300000000000000000000000000000000000000
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	AUG.	11111		00001111111111111111111111111111111111
(cont.	JULY	0.0 3.3 0.0 3.1 0.0 0.0	JULY	173 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
s spp.	JUNE	0.0 0.0 0.0 0.0 0.0 3.0	JUNE	0000000
Ichthyococcus	MAY	0	MAY	000000000000000000000000000000000000000
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	MAR.	00000	MAR.	0
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		123.0 123.0 123.0 127.0 130.0	STATION	773 773 773 773 773 773 773 773 773 773

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21.2 21.2 22.1 22.1 24.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
21.2 21.2 221.2 24.9 24.9 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
21.2 24.9 24.9 14.3 14.3 16.0 0.0 0.0 16.2 17.7 18.6 27.7 19.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
22.2.2 24.2 14.3 14.3 6.0 0.0 0.0 16.2 27.7 27.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
245.5 45.6 0.0 0.0 0.0 0.0 16.2 27.7 27.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
24.3 0.0 0.0 0.0 16.2 17.7 18.2 27.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
45.6 0.0 0.0 16.2 13.7 16.2 27.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
0.0 0.0 0.0 0.0 16.2 45.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
20.0 16.2 27.7 27.7 27.7 27.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
0.0 27.7 259.2 27.7 27.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
116.2 133 59.2 - 13 27.77 - 1 27.77 - 1 27.9 - 2 27.9 - 2 0.0 - 1 0.0
116.2 13 27.7 1 27.7 1 27.9 2 0.0 0.0 - 1 0.0 - 1 0.0 - 7 68.8 - 7 0.0 - 7
227.7 259.2 27.9 27.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
27.9 27.9 27.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
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TABLE 4. (cont.)

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						Sterno	Sternoptychidae	ae		1			
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TABLE 4. (cont.)

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cont.)	JULY		0 0 0 0	17.1 0.0 9.4 6.4	ā	JULY	0.0	JULY	0.0
Sternoptychidae (cont.	JUNE			000000	Astronesthida	JUNE	Chauliodus macouni	JUNE	
noptycł	MAY	1 t 1 t	1 1 1 1	1 1 1 1 1	Astron	MAY	- anliod	MAY	0.00
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	STATION	30.0 35. 30.0 40. 30.0 45. 30.0 50.	33.0 50. 33.0 30.	133.0 60.0 137.0 40.0 137.0 50.0 137.0 50.0			137.0 60.0	STATION	40.0 155.0 43.0 55.0 43.0 50.0 43.0 50.0 43.0 120.0 43.0 120.0 47.0 100.0 47.0 100.0 50.0 60.0 50.0 60.0 53.0 60.0 53.0 80.0 57.0 80.0 57.0 80.0 57.0 80.0 60.0

					Chauliodus	1	macouni	(cont.	(
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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

					Lestidiops		ringens	(cont.			 		
STATION	JAN	N.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
123.0 50. 127.0 50.	0		 	0.0	0.0	1 1	3.1	3.4	1 1	0.0	0.0	0.0	0.0
						Notolepi	is risso	02					
STATION	JAN	z	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
3.0 90	0	1 .				3.5					0.0		١
77.0 70.	0	0.	0.0	1	1 9	e c	1 1	0 0 0	0.0	1 1	0.0	0.0	1 1
7.0 80	00	0 0	0 0	1 1	3.0	3.6	ı			1	0.0		ı
0.0 90	0			l		0.0	ı				0.0		1 0
0.0 53	00			1 1		000	1 1		1 1	0 0	0.0	ı	2.7
0.0	0		0 0	ı		0.0	ı		ı		3.2	1	0.0
0.0 140	0			i	0		1 1		1 1		70	1 1	0.0
3.0 80	00		0.0	1 1	0 (1 1		١	0	0.0	ł	
7.0 90	. 0	0 0	ı	ſ		ı			ı		0.0	I	3.1
07.0 70	0	0		1		i			ı		0.0	I	0.0
0.0 50	00		0.0	1 1	0.0	1 1	0 r		1 1	000	000	ıı	000
13.0 35	00			ı		ı	0 0		ı		0.0	ł	0.0
					Ste	Stemonosudi	Ŋ	macrura					1
STATION	JAN	N.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
113.0 70.	0 0	0.0	0.0		0.0		0.0	0.0		3.2	0.0	1	0.0
					S	Scopelosaurus		·dds			 		
STATION	JA	AN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
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3.0 60	0 0			1 1	1 1		1 1			ll			1
7.0 80	0		0 0	ı	6.5		ı		0	I			1 1
7.0 90 0.0 65	00	0 0	0 9	1 1	0°0°	0 0	1 (0.0		ii	000	000	1 1
3.0 80			0 0	1 1	0.0	0 0	1 1	0 0	0 0	1 1			l I
)		•										

TABLE 4. (cont.)

				Scope	Scopelosaurus	s spp.	(cont.					
STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
90.0 70.	0.0	0.0	11	3.2	0.0	1 1	6.3	1 1	0.0	0.0		0.0
0.0 100.	000	ı	ı			ŀ		ı			ı	
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3.0 90.	0	0.0	i	0 0	0.0	ı		ı			ı	
97.0 90.	0		ł					ı			ı	
03.0 45.	0		ı		i			1			ı	
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07.0 50.	00		ŧ		1			1		0 0	ı	
07.0 55.	0		t		ı			ı		0	i	
07.0 70.	0		ı		•			I			١	
10.0 40.	•		1 (1			I			ı	
7.0 30.	00	00.0	t I	2.5	1 1	0.0		1 1	0.0	0 0	1 1	0.0
					Scopel	Scopelarchida	a)					
-	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
40.0 90.	2							! ! ! ! ! ! !		† 		
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0.0 80.	0		ı	ı		ı			ı			ı
0.0 90.	0,	•	ı	ı		t		0.0	ı			ı
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0.0 80.	2.		I	ı		ı			i			ı
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7.0 65.	000		ı			1			ı			ı
0.0 70.	° m	8	1 1		0 1	LI	0 0		1 1			1 1
0.0 90.	0		ı			ı			ı			ı
83.0 70.0	0.0	0.0	1 1	0.0	9 c	1 1	0°0	0.0	1 1	0.0	0.0	1 1
7.0 80.	0	• •	ı	• •		1		0	0.0			1

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	 			Sco	pelard	Scopelarchidae (cont.	cont.)					
STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
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DEC. Myctophidae (cont.) STATION

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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Stenobrachius leucopsarus (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

Diogenichthys atlanticus (cont.)

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NOV.	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	NOV.	
OCT.	0.0000000000000000000000000000000000000	oct.	00.00 00
SEP.	WOOOOW 1	SEP.	00000100000000000000000000000000000000
AUG.		AUG.	
JULY	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	JULY	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
JUNE	12.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	JUNE	
MAY	0.0 0.0 0.0 7.9 0.0 0.0 0.0 0.0 0.0 Diogenichthys	MAY	0.0000000000000000000000000000000000000
APR.	0.0 0.0 7.9 0.0 0.0 0.0 0.0 0.0	APR.	00000000000000000000000000000000000000
MAR.	00000000	MAR.	
FEB.	0000	FEB.	2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
JAN.	0.0000000000000000000000000000000000000	JAN.	122.7 12.7 12.7
	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0		0.0044400.0000000000000000000000000000
STATION	117.0 117.0 117.0 117.0 120.0 120.0 120.0 120.0	STATION	93.0 93.0 100.0 100.0 100.0 100.0 103.0 107.0 107.0 1107.0 1107.0 1107.0 1110.0 1113.0

Diogenichthys laternatus (cont.) STATION

 	DEC.	111	!	DEC.	1 1	0.0	0.0		DEC.	000	0.0	0.0	000	0.0	000	000	000	000	0.0	000	000	000	
1	NOV.	0.0		NOV.	0.0	1 1	1.1		NOV.	1 1 1	1 1	1 1	1 1	1 1	2.8	0.0		0.0				000	
i 1 1 1 1	OCT.	6.0 3.2 25.8		OCT.	0.0		000		OCT.				000		•	0.0	1 1	1 1	1 (000	
	SEP.	1 1 1		SEP.	1 1	0.0	0.0		SEP.					• •	000			0 0			1 1	1 1 1	
ıt.)	AUG.	1 1 1		AUG.	3.0	1 1	1 1		AUG.	1 1 1	1 1	1 1	1.1	1-1	1 1	LΙ	l t	1 1	1 1	l I	1 1	1 1 1	
s (cont.	JULY	0.0)j	JULY	0.0	0.0	0 m 0	snIns	JULY	000	0.0	000	000	0.0	000	000	0.0	0.0			0 0	000	
laternatus	JUNE	0.0	a risso	JUNE	1 1	1 1	0.0	tenuiculus	JUNE	0000	00	000	000	0.0	000	4.0	0.0	10.7	000	0.00	0.00	000	,
	MAY	1 1 1	Electrona	MAY	0.0	0.0	1 1 1	Conichthys	MAY	111	1 1	ı	111	1 1	1.1	1 1	1 1	1 1	ı	1 1	1 1	1 1 1	
Diogenichthys	APR.	6.0 41.3 20.4	E	APR.		0.0	000	Gon	APR.	000	0.00	000		0.00	000	0.0	0.0	0.0	0	0 0		000	
Dia	MAR.	30.6 27.0 39.5		MAR.		lι	1 1 1		MAR.	111	1 (1	111	1 1	1 1 1		0 0		• •			0 6 6	
	FEB.			FEB.		0.0	0.0		FEB.	10.7							1 1	1 1	1	1 1	1-1	1 1 F	
	JAN.			JAN.	0.0		0.00		JAN.	000		0 0						l i	1	1 1	1 1	1 1 1	
		40.0 50.0 60.0			0	90.	32.0 45.0			90.0 45.0	0 4	000	000	000		9.		00		00	50	0 00 0	,
	STATION	137.0 137.0 137.0			73.0	3.0	107.0 110.0		STATION	100.0	07.	07.	10.	13.	17. 17. 17.	17. 18.	20.	20.	23.	23.	$\frac{27}{27}$.	27. 30.	•

TABLE 4. (cont.)

	DEC.	0.00110111	DEC.	00000000000	DEC.	100000000000000000000000000000000000000
	NOV.	0.0000000000000000000000000000000000000	NOV.	000000000000000000000000000000000000000	NOV.	0.0
	OCT.	000000000	OCT.	0.0000000000000000000000000000000000000	OCT.	000 00000000000000000000000000000000000
	SEP.	1111111	SEP.	00,000	SEP.	
(:	AUG.	111111111	AUG.	111111111	AUG.	0.0111111111111111111111111111111111111
(cont.	JULY	0000000000	JULY	000000000000000000000000000000000000000	JULY	400000000000000000000000000000000000000
uiculus	JUNE	o	JUNE	0.0 0.0 2.9 0.0 0.0 0.0 0.0 0.0 0.0	JUNE	
hys ten	MAY	Hygophum	MAY	mnydobham	MAY	00
Gonichthys tenuiculus	APR.	000000000	APR.	000000000000000000000000000000000000000	APR.	70000000000000000000000000000000000000
J	MAR.	10.1 14.4 10.2 10.2 13.3 13.3 13.3 13.2	MAR.	004400000	MAR.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	FEB.	111111111	FEB.	000111111111	FEB.	
	JAN.	1 1 1 1 1 1 1 1 1 1	JAN.	000	JAN.	000000000000000000000000000000000000000
	Z	8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9		660.0 60.0 60.0 60.0 60.0 85.0 85.0 35.0 35.0	Z	7000 8000 7000 7000 7000 8000 4500 4500
	STATION	130.0 133.0 133.0 133.0 133.0 137.0 137.0	STATION	113.0 1120.0 120.0 123.0 123.0 123.0 133.0 137.0	STATION	73.0 100.0 100.0 100.0 100.0 103.0 107.0 107.0 110.0

				TobhH	Hygophum atratum	ratum	(cont.)					
TATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
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0.0 90.		I			ı			I		ı		
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3.0. 45.		ı			ı			ı		ı		
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7.0 60.		1			ı			ı	ı			1
				Hy	ygophum	reinhardti	rdtii					
STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
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t.)	AUG.	1 1		AUG.	111111111		AUG.	
ii (cont.	JULY	0.0	a	JULY	00000000000	lu l um	JULY	
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	FEB.	0.0		FEB.	0000111111		FEB.	00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	JAN.	0.0		JAN.	0000001111		JAN.	
	NO	80.0		ON	2000 7000 7000 7000 8000 8000 3400		NO	900 1000 11200 1200 1200 1400 1400 1400 1
	STATION	113.0		STATION	90.0 110.0 110.0 117.0 120.0 120.0 120.0 120.0		I ₽ .	987 990.0 990.0 993.0 993.0 100.0 100.0 100.0 103.0 103.0

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50.0 50.0 50.0 50.0 53.0 53.0 53.0 53.0	14.1				LVI		JOPE	AUG.	· AHS		· AON	
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OCT.	3.5	0.0	-					0 0					0			0 0																																	00000000000000000000000000000000000000
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t.)	AUG.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	AUG.	AUG. 0.0000000000000000000000000000000000
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TABLE 4. (cont.)

Symbolophorus californiensis (cont.)

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Merluccius productus (cont.)

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-	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
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TABLE 4. (cont.)

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ABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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	SEP.	000000000000000000000000000000000000000	 	SEP.	0.0		SEP.	111111
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saira (JUNE	1	Atherinidae	JUNE	0.0	Trachipteridae	JUNE	111111
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TABLE 4. (cont.)

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- THE TOTAL THE	in	aes s	Melamphaes s. MAY Nelamphaes s. MAY 12.3 12.3 12.3 12.3 12.3 10.0	pp. (cont.) JUNE JULY AUG. SEP. OCT. NOV. DEC.	JULY AUG. SEP. OCT. NOV.		.2 4.3 - 11.0 3.3 - 3.	1 4.3 - 3.5 6.7 - 0.	0 4.5 - 0.0 - 0.0		1 2000			.0 - 2.6 - 0.0	.2 Ib.3 - 5.5 0.0 - 3.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 4.5 - 3.8 3.3 - 0.						.3 3.1 - 0.0 0.0 - 1.5 5.	·0 13.4 - 2./ 0.0 - 0.	0.0 - 0.0 0.0 - 0.0	0.0 0.0 - 0.0 0.0 - 0.0	0.0 4.1 $-$ 0.0 0.0 $-$ 5.	.1 8.8 - 0.0 3.2 - 3.	.5 0.0 - 0.0 2.9 - 0.	.1 0.0 - 0.0 0.0 - 0.	0.0	0.0 0.0 - 0.0 0.0				0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	.0 - 0	2 0.0 - 0.0 0.0 - 0.	0 7.0 - 0.0 - 0.0	.0 3.4 - 0.0 - 0.0 0.	.0 3.3 - 0.0 - 0.0 0.	.0 0.0 - 9.2 - 0.0 0.	0.0 - 0.0 0.0 - 0.0 0.0	0.0 - 2.9 - 0.0 0.	.0 10.4 0.	.2 0.0 - 6.5 - 0.0 0.	0.3.5 - 12.4 - 7.9 0.	,0 3,4 - 0,0 - 3,3 3,	,0 - 3,1 - 3,	0 3.4 - 0.0 - 3.1 0.	000
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TABLE 4. (cont.)

	 		Mel	Melamphaes	spp.	(cont.)					
JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
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				Poromitra	tra spp	•					
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				Scc	Scopeloberyx robustus	ryx robi	ıstus					
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
0.06 0.06	0.0	0.0	 	0.0	0.0		0.0	1	0.0	3.2	1	2.9
				Scot	Scopelogadus		bispinosus					
STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
63.0 90.0 73.0 90.0 77.0 90.0 80.0 70.0 83.0 90.0 90.0 120.0 93.0 120.0 93.0 140.0 107.0 60.0 107.0 60.0 117.0 80.0 1133.0 60.0	000000000000000000000000000000000000000	000 00 00000000000000000000000000000000	0.00	Macz	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		3.4 3.4 3.2 3.2 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0000011111111111	0.0000000000000000000000000000000000000	000000000000000000000000000000000000000	000000111111111000	0 0000000
STATION	TAN	FEB	MAR	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
۱ ۲	C CAIN.	r teas	٩i	OF W.	TUTA					• • • • • • • • • • • • • • • • • • • •		
103.0 45.0 107.0 60.0 110.0 70.0 110.0 80.0 113.0 60.0 117.0 60.0 120.0 70.0	000000000000000000000000000000000000000	000000000000000000000000000000000000000	00.0	00000000		0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 thus spp	0.00 0.00 0.00 0.00 0.00 0.00		000000000000000000000000000000000000000	3.1 3.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0	7 2.0	00000000
STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
63.0 60.0 70.0 51.0 70.0 75.0 77.0 51.0	0.0	0.0000	1 1 1 1	1111	0000		0.0	0000	111	0.0	0.0	1111

TABLE 4. (cont.)

	DEC.	0000		DEC.	000000000000000000000000000000000000000	!	DEC.	00000
	NOV.	0.0		NOV.	00000011		NOV.	000000000
	OCT.	00000		ocr.	0000000		OCT.	000000000000000000000000000000000000000
	SEP.	0.00		SEP.	0.00		SEP.	00000
	AUG.	0.0		AUG.	2.0 0.0 0.0 0.0 0.0		AUG.	0.0000000000000000000000000000000000000
ont.)	JULY	0.00		JULY	00000000		JULY	100.00 0.00 0.00 0.00 0.00 0.00 0.00 0.
spp. (cont.	JUNE	0.000	Agonidae	JUNE	0.0	Cottidae	JUNE	1.
Syngnathus	MAY	0.0	Ago	MAY	000000	Cot	MAY	1
Syng	APR.	0.0 2.6 3.1 0.0		APR.	0.00		APR.	0000000
	MAR.	1 1 1 1		MAR.	1111111		MAR.	
	FEB.	7 0.0 0.0 0.0		FEB.	0000#6000		FEB.	11.6 11.6 11.6 13.2 13.2 13.2 10.0 10.0 10.0 10.0
	JAN.	00000		JAN.	0,0000000000000000000000000000000000000		JAN.	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
		43.0 29.0 40.0 29.0		2	52.0 50.0 51.0 40.0 50.0			8
	STATION	83.0 97.0 100.0 103.0		STATION	60.0 70.0 73.0 80.0 83.0 83.0 87.0		STATION	600 600 600 600 600 600 600 600 600 600

1	DEC.	000000	! ! !	DEC.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	NOV.	000	 	NOV.	000000000000000000000000000000000000000
	OCT.	00000111		OCT.	00000000000000000000000000000000000000
	SEP.	000 000		SEP.	SEP.
	AUG.	111111		AUG.	Aug.
•	JULY	0.0 4.3 2.9 1.7 10.7 0.0	marmoratus	JULY	GULY 3
e (cont	JUNE	000000000000000000000000000000000000000		JUNE	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
Cottidae (cont.	MAY		Scorpaenichthys	MAY	Cyclor
	APR.	10.8 3.2 1.7 1.8 0.0	Scorpa	APR.	APR.
	MAR.	0.00		MAR.	MAAR
	FEB.	0.00		FEB.	FEB:
	JAN.	0000011		JAN.	2.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
	ON	29.0 29.0 30.0 31.0 40.0 36.0		ON	50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 65.0 65.0 65.0 65.0 65.0 65.0 65.0 65.0 65.0 65.0 65.0 66.0
	ATI	000.0 03.0 07.0 23.0		TATIO	660.0 663.0 663.0 663.0 663.0 663.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 1

TABLE 4. (cont.)

	DEC.	00000		DEC.	1111		DEC.	1		DEC.	000000000000000000000000000000000000000
	NOV.	0.00		NOV.	0000		NOV.	0.0] 	NOV.	000000000000000000000000000000000000000
	OCT.	000000		OCT.	00000		OCT.	0.0		OCT.	00000000000000000
	SEP.	00000		SEP.	1 1 1 1 1		SEP.			SEP.	0000000
	AUG.	0.00		AUG.	00000		AUG.	0.0		AUG.	00000000011111111
ont.)	JULY	0.0 0.0 0.0 0.0 0.0 0.0	(I)	JULY	00000	sno	JULY	0.0	SI	JULY	0.0000000000000000000000000000000000000
dae (co	JUNE	1 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Hexagrammidae	JUNE	1111	elongatus	JUNE	1	s pictus	JUNE	11111111111100020
Cyclopteridae (cont.	MAŸ	4.3	Hexagi	MAY	00000	Ophiodon	MAY	0.0	Oxylebius	MAY	0000000000011111
Сус	APR.	0.0 0.0 1.7 1.6 1.6		APR.	11111	do	APR.		0	APR.	000000000000000000000000000000000000000
	MAR.	111111		MAR.	1 1 1 1 1		MAR.			MAR.	0.0000000000000000000000000000000000000
	FEB.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		FEB.	70.1 0.0 0.0 1.0		FEB.	2.9		FEB.	80400000000000000000000000000000000000
	JAN.	000000		JAN.	0.0		JAN.	0.0		JAN.	HOORWOOOWOOOOO
	NO	51.0 29.0 29.0 30.0 31.0		ON	50.0 50.0 65.0 48.0 51.0		Z	0.09		Z	850.00 800.00 800.00 800.00 800.00 800.00 800.00
	TAT	77.0 83.0 100.0 103.0 107.0		STATIO	60.0 63.0 63.0 77.0		STATION	0.09		STATION	63.0 73.0 77.0 80.0 80.0 83.0 83.0 83.0 93.0 93.0 93.0

	DEC.	000000000000000000000000000000000000000		DBC.	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
	NOV.	0.000.000.000.000.000.000.000.0000.0000.0000		NOV.	NOV.
.	OCT.	000000000000000000000000000000000000000		OCT.	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
 	SEP.	00000000		SEP.	3.14 3.11 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
	AUG.	00000		AUG.	AUG
Ď.	JULY	000000000000000000000000000000000000000		JULY	21.4 21.4 27.0 2.0 3.3 3.3 3.3
spis spp.	JUNE	0.0000000000000000000000000000000000000		JUNE	tes spp
Zaniolepis	MAY	0.00	מל דרום	MAY	Sebastes MAY Ju
	APR.	1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		APR.	APR.
	MAR.	0		MAR.	MAR.
	FEB.	00004444000m01		FEB.	FEB.
	JAN.	70000000000000000000000000000000000000		JAN.	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
		50.00 52.00 52.00 52.00 52.00 53.00 54.00 54.00			Na 0.00 0.
	STATION	63.0 63.0 73.0 83.0 87.0 87.0 97.0 100.0 120.0		STATION	103.0 110.0 117.0 117.0 117.0 118.0 120.0 120.0 120.0 133.0 40.0 40.0 40.0 40.0 40.0 40.0

10N JAN, FEB. MAR. APR. MAY JUNE JULY AND 150.0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	JAN. FEB. MAR. APR. MAY JUNE JULY AUG 131.5 131.5 132.1 2.7 13.0 12.3 13.1 13.2 13.1 13.2 13.1 13.2 13.1 13.2 13.1 13.2 13.2 13.2 13.2 13.2 13.3													
45.0 453.1 190.0 1293.8 80.0 1293.8 100.0	45.0 453.1 —<	ION	AN	FEB.	i 🗠	APR.	MAY	JUNE	JULY	AUG.				DEC.
95.00 139.15 100.00	131.5 131.5 130.4 130.5 130.	45	453			1	1	ı	1	ı	ı	ı	ı	,
60.0 1299.8 1	55.0 30.4	50.	131.	ı	ı	ı	1	ı	ı	ı	1	1	ı	1
100.00 37.0 2.5	60.0 37.0	55.	30.	1	ı	1	ı	ı	ı	i	ı	1	ı	ı
80.0 2.7	980.0 2.7	.09	37.	ı	1	1	ı	ı	1	ı	1	ı	ı	ı
90.0 1299.8	90.0	80.	2.	ı	1	ı	ı	ı	1	ı	ı	i	ı	i
90.0 1299.8	100.0 1293.8	90°	2.	ı	ı	ı	ı	ı	ı	ı	ı	ı	ı	1
1299.8 1.500.0 1.299.8 1.500.0 1.299.8 1.500.0 1.299.8 1.500.0 1.299.8 1.500.0 1.500	50.0 1299.8 -	100.	3,	1	ı	ı	ı	ı	ı	ı	ı	ı	ı	ı
16.0 16.0	16.0	50.	1299	1	ı	ı	ı	1	ι	ı	ı	1	ı	1
9.8 9.8	100 100	9	16.	1	ı	ı	ı	1	ı	ı	ı	ı	ı	ı
190.0 190.0	1800 1900	70.	6	1	ı	ı	í	1	ı	ı	1	ŀ	1	ı
190.0 17.1	100.0 5.7.0 5.5.0 	80	٥	ı	ı	1	ı	1	1	ı	t	1	1	ł
47.0 243.2 55.0 27.8 65.0 27.8 70.0 27.8 70.0 27.8 70.0 27.3 80.0 27.3 80.0 27.3 80.0 26.8 80.0 26.8 80.0 26.9 80.0 26.9 80.0 27.3 80.0 27.3 80.0 27.3 80.0 27.3 80.0 27.3 80.0 27.3 80.0 27.3 80.0 27.3 80.0 27.3 80.0 27.3 80.0 27.3 80.0 27.3 80.0 27.3 80.0 27.3 80.0 27.3 80.0 44.9 80.0 44.9 80.0 44.4 80.0 86.8 80.0 90.0 80.0 </td <td>47.0 243.2 -<</td> <td>100</td> <td>'n</td> <td>1</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>1</td> <td>ı</td> <td>1</td> <td>ı</td> <td>1</td> <td>ı</td>	47.0 243.2 -<	100	'n	1	ı	ı	ı	ı	1	ı	1	ı	1	ı
55.0	55.0 - 77.8 - </td <td>47</td> <td></td> <td>43</td> <td>Į</td> <td>ı</td> <td>1</td> <td>1</td> <td>ı</td> <td>1</td> <td>ŧ</td> <td>ı</td> <td>ı</td> <td>1</td>	47		43	Į	ı	1	1	ı	1	ŧ	ı	ı	1
1.5	55.0 - 27.8 - </td <td>20.5</td> <td></td> <td>77</td> <td>1</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>ι</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>1</td>	20.5		77	1	ı	ı	ı	ι	ı	ı	ı	ı	1
55.0	67.0 - 15.7 - </td <td>י טוני</td> <td></td> <td></td> <td>i</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>ı</td>	י טוני			i	ı	ı	ı	ı	ı	ı	ı	ı	ı
52.0	70.0 - 6.4 - <td>ער</td> <td></td> <td></td> <td>ı</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>1</td> <td>ı</td> <td>ı</td> <td>i</td> <td>ı</td> <td>i</td>	ער			ı	ı	ı	ı	1	ı	ı	i	ı	i
55.0	55.0 320.1 -<	. 0			1	ı	ı	ı	1	ı	ı	1	ı	ı
55.0 237.3 -<	55.0	2 6				ı	ı	ı	1	ı	ı	ı	ı	١
60.0 30.3 - - 237.3 - <td< td=""><td>60.00 25.73.4 - <td< td=""><td>2 2</td><td></td><td>200</td><td> </td><td> </td><td> </td><td></td><td>ı</td><td>1</td><td>١</td><td>ı</td><td>١</td><td>ı</td></td<></td></td<>	60.00 25.73.4 - <td< td=""><td>2 2</td><td></td><td>200</td><td> </td><td> </td><td> </td><td></td><td>ı</td><td>1</td><td>١</td><td>ı</td><td>١</td><td>ı</td></td<>	2 2		200					ı	1	١	ı	١	ı
90.0	80.0 - 237.3 -<	0 0		200	1	l	1	1					. 1	ı
90.0 30.3 - </td <td>70.0 30.3 -<!--</td--><td>900</td><td>ı</td><td>26</td><td>l</td><td>ł</td><td>ı</td><td>ı</td><td>ı</td><td>ı</td><td>I</td><td>ł</td><td>1 :</td><td>1 1</td></td>	70.0 30.3 - </td <td>900</td> <td>ı</td> <td>26</td> <td>l</td> <td>ł</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>I</td> <td>ł</td> <td>1 :</td> <td>1 1</td>	900	ı	26	l	ł	ı	ı	ı	ı	I	ł	1 :	1 1
80.0	80.0	70.	ı	•	ı	ı	ı	ı	ı	i	ı	ł	ł	ı
51.0 - 33.1 - </td <td>90.0 - 350.9 -<</td> <td>80.</td> <td>ı</td> <td></td> <td>ŀ</td> <td>ı</td> <td>ŧ</td> <td>ı</td> <td>ı</td> <td>1</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>ı</td>	90.0 - 350.9 -<	80.	ı		ŀ	ı	ŧ	ı	ı	1	ı	ı	ı	ı
51.0 - 750.9 -<	51.0 - 350.9 -<	90.		m,	ı	ı	ı	ı	ı	ı	ı	ı	ı	ı
55.0 - 700.6 -<	55.0 - 700.6 -<	51.		50.	ı	ı	ı	1	ı	í	ı	I	ı	ı
60.0 2668.9 - 2668.9 - - 25.7 -	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	55.		700.	ı	ı	1	ı	ı	1	ı	ł	ı	ı
70.0 - 25.7 - </td <td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td> <td>.09</td> <td></td> <td>668.</td> <td>ı</td> <td>ı</td> <td>ı</td> <td>1</td> <td>ł</td> <td>1</td> <td>ı</td> <td>1</td> <td>ı</td> <td>ı</td>	$\begin{array}{cccccccccccccccccccccccccccccccccccc$.09		668.	ı	ı	ı	1	ł	1	ı	1	ı	ı
80.0 49.4 6.6 6.2 6 6.2 6 6.0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	70.		25.	ı	ł	1	1	ı	ı	ı	1	ı	ı
50.0 49.4 0.0 - 2.8 0.0 - 0.0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	80		2	ı	ı	ı	1	,	1	1	1	ı	ı
52.0 49.9 588.0 - 0.0 - 0.0 - 0.0 - 0.0 - 0.0 - 0.0 - 0.0 - 0.0 - 0.0 - 0.0 - 0.0 - 0.0 - 0.0	52.0 49.9 588.0 - - 0.0 - 4.5 0.0 55.0 2040.6 7617.5 - - 40.0 - 45.6 55.6 60.0 81.0 457.1 - - 0.0 - 109.8 13. 65.0 21.9 8.2 - - 0.0 - 44.4 67. 70.0 21.9 5.9 - - 0.0 - 44.4 67. 80.0 36.5 0.0 - - 0.0 - 44.4 67. 90.0 194.6 4.8 - - 0.0 - 44.4 67. 50.0 194.6 4.8 - - 0.0 - 0.0 0.0 50.0 1448.0 96.8 - - 124.2 - 102.2 0.0 55.0 887.2 5964.9 - - 742.5 - 802.8	200	40		ŧ	ı		1			1		1	ı
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	DEC.	11111110011100000000000	DEC	000000000000000000000000000000000000000
	NOV.	0000001110001111111111111	MON	0.00
	OCT.		E-50	11.2 14.1 10.0 10.0 0.0 0.0 55.3 32.9 32.9 3.5 141.8
	SEP.	111111100000000000000000000000000000000	1000	0000001111111
	AUG.	000000		
(cont.)	JULY	00w000 ww0000ww0w0w044040		0.00004000000
spp.	JUNE	1		
Sebastolobus	MAY	0000 0000 0000 0000 0000 0000 0000 0000 0000		
Sebas	APR.	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0		0.00
	MAR.	0.0.11111111111111111111111111111111111		0.0000000000000000000000000000000000000
	FEB.	00000 000000000000000000000000000000		1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	JAN.	000000000000000000000000000000000000000		0000000
	ON	0.00448899999999999999999999999999999999	1	225.0 226.0 226.0 226.0 226.0 227.0 227.0 227.0
	STATIO	80.0 80.0 83.0 83.0 83.0 83.0 87.0 87.0 90.0 90.0 90.0 90.0 91.0 91.0		STATIO 113.0 117.0 118.0 120.0 120.0 120.0 133.0 133.0 133.0

	DEC.	0.0		DEC.	
	NOV.	0.0		NOV	0000 0000 0000 0000 0000 0000 0000 0000 0000
	OCT.	0000		OCT.	00000000000000000000000000000000000000
	SEP.	0.0		SEP.	1 1 1 1 20 00 00 00 00 00 00 00 00 00 00 00 00
	AUG.	0.00		AUG.	000.0000
	JULY	0000	spp.	JULY	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Blennioidei	JUNE		i	JUNE	
Blenr	MAY	0.00	Hypsoblennius	MAY	00000mm00
	APR.	3.2		APR.	
	MAR.	 - - 		MAR.	0 000000000000000000000000000000000000
	FEB.	0.0		FEB.	00 000000000000000000000000000000000000
	JAN.	52.0 0.0 0.0 0.0		JAN.	
	ON	50.0 55.0 52.0		MO	2225.0000000000000000000000000000000000
	STATIO	60.0 63.0 80.0 87.0		TALI	73.0 887.0 883.0 887.0 87.0 990.0 900.0 900.0 1100.0 1113.0 1120.0 1123.0 1130.0 1130.0 1133.0

TABLE 4. (cont.)

					Hypso	Hypsoblennius	s spb.	(cont.					1
STATION		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
137.0 2 137.0 2 137.0 3	2.0 3.0 0.0			000	0.0	111	0.0	256	111	1 1 1	2.8 6.3 0.0	000	000
						C1 i	Clinidae						
STATION		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
1 1010	120	5.5	0.0			0.0	1 1	0.0	0.0	1 1	0.0	0.0	1 1
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0.0	2			ı		0.0	ı			ı		•	ı
0.0	9			i		0.0	ı			1 1			1 1
2°C	٠ د			l 1			1 1			1 1	0 (1 1
3.0	; ;	0 0		ı		0.0	ı			1			ı
7.0 3	3	0		ı		0.0	1			2.6			
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3.0 2	7.			1 1		000	1 1		1	2.8		ı	
3.0 2	8			ı		3.1	1 4		ı	0.0		1	- 8
7.0 2	٠ 0			1 1		1 1	0.0		l I		0 -	1 1	0 0
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07.0 3	1.		0	I		ı	0.0		ı	1 0		ł	
20.70	10	6 .		1 1		1 1		0 0	1 1	0 0	0 0	1 1	0 0
13.0 3	0.			ı		I	0.0		1	0		ı	
20.02	4			1		1	0.0		ı	0			0
120.0 4 123.0 3	0.0		1 1	3.2	0.0	1 1	00.0	0 0	1 1	0.0	1 1	00	0.0
						Gob	Gobiidae						
STATION		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
60.0 60.0 60.0 5	0.0 2.0 5.0	0.00	0.0	111	111	000	111	2.8	0.0 10.4 0.0	1 1 1	0.0 7.0 0.0	0.0	1 1 1

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	AUG.	0.0																						9.5					ı	ı	1 1	ı	ı	ı	ı	ı	ı	i	ı	ı	ı	1 1	ı	1	
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cont.	JUNE	1 1	ı	ı	1	ı	ı	1	ı	1	ı	1	ı	ı	1	1	ı	ı	ı	ı	ı	1	ı	ı	1	ı	ı	ı	ı	ı	ı	1	ı	1	1	ı	ı	ı	ı	ı	ı	1 (- 1	1	
Gobiidae	MAY	0.0																		0													. (•	D 0			
Ö	APR.		ı	1	ı	ı	ı	ł	ı	ł	1	1	1	ı	1	1													- 0			2.0	6 (a,				0.0			
	MAR.		1	1	ı	ı	ı	ı	ı	ı	ı	ı	ı	1	ı	ı	ı	ı	ı	1	4	1	1	1	ı	ı	ı	1	ı	١	ı	1	1	1	1	Í	ı	1	0.0	١	ı	ı	1 1	ı	
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	STATION	0.09	å		 	7	7	7		• • ~	• • ~		• _				: _	•	·	,	ا ر	, ~	٠ ٣		, ~	'n	m	'n	S	7.	۲.		٠,	: -			0	0	Ö	'n	'n	ຕໍ່ເ	ກໍເ	ว๋◄	71

DEC. DEC. NOV NOV 7100011110111111 0.0 0098 OCT S 1100 SEP SEP AUG. 0.0 JULY JULY aenigmaticus Gobiidae (cont.) JUNE JUNE 0.0 Icosteus MAY APR. 000000 MAR MAR Ŋ FEB FEB 0.0 JAN JAN 55.0 STATION STATION 97.0 97.0 97.0 97.0 97.0 97.0 1100.0 1100.0 1113.0 1117.0 1117.0 1117.0 1117.0 1117.0 1117.0 1117.0 1117.0 1117.0 1117.0 1117.0 0.09

1	DEC.	000000000000000000000000000000000000000	DBC
	NOV.	0.0000000000000000000000000000000000000	MOV.
	OCT.	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.00
	SEP.	22.7.10.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.	SEP.
	AUG.		AUG. 3.3 3.3 3.1 3.5 0.0 0.0 67.3 12.8 0.0 22.1 21.0
p.	JULY	2.8 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3	255.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
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	JAN.	000000000000000000000000000000000000000	NAN 00000000000000000000000000000000000
		225.00000000000000000000000000000000000	0N 80.0 51.0 55.0 60.0 65.0 70.0 47.0 70.0 70.0 80.0 60.0
	STATION	87.0 87.0 97.0 97.0 1113.0 1113.0 1117.0 1117.0 1120.0 120.0 120.0 120.0 120.0 120.0 120.0 130.0	STATIO 70.0 77.0 77.0 77.0 77.0 80.0 80.0 80.0

TABLE 4. (cont.)

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JUNE	120.00 120.00 120.00 120.00 120.00 120.00 120.00 13		JUNE	- 4 0.0 0.0 0.0 0.0 0.0	punctipinni	JUNE
MAY	00000009111111111111111111111	Semicossyphus	MAY	ຫຼາງ	Chromis p	MAY
APR.		Sen	APR.	00000000	Ch	APR.
MAR.	0.0		MAR.	0.00		MAR.
FEB.		1	FEB.	00000111		FEB.
JAN.	000000000000000000000000000000000000000		JAN.	00000011		JAN.
NO	8883 8833 800.00 800.00 800.00 800.00 800.00 800.00 800.00 800.00 800.00 800.00		NC	32.0 32.0 35.0 35.0 440.0 45.0		NO
STATI	90 90 93 93 93 93 93 93 97 97 97 97 97 97 97 97 97 97 97 97 97		STATION	90.0 100.0 103.0 113.0 117.0 120.0 130.0		STATI

					Chromis	punctipinni	pinnis	(cont	•		 		
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27.	0	1	ı	•		ı			ı	ı	•		

						Howella brodiei	prodi	ej.					
	Page	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
0.0	90.	0.0	0.0] 		0.0		0.0	0.0			0.0	1 1
93.0 1	60.0		0.0	1 1	0.0	1 1	0.0	0.0	1-1	0.0	80.0	1 1	0.0
						Brama	a spp.						
STATION		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
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97.0	70.			1	0.0	ı	0.0	0.0	ı	0.0	3.1	t	0.0
000	3			1 1	0.0	1 1	. C		1 1	3,7	000	i i	
00.	0		0 0	ı	0.0	1	0.0	0.0	1	0.0	6.7	1	0.0
10.	0.4	0.0	0.0	1 1	0.0	1 1	0.0	00	1 1	2.5	0.0	1 1	0.0
20.		0.0		0.0	3.5	1	0.0	000	ı	000		0.0	000
123.0 127.0	42.0 40.0	1 1	1 1	3.7	0.0	1 1	000	0.0	1 1	0.0	0.0	000	2.8
						Cara	Carangidae						
STATION		JAN.	FEB.	MAR.	APR.	MAY	JONE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
133.0	25.0		i i	0.00	0.00		000	1.2	 	1 1	000	000	000
3/.	ň	I	ı		0.0	- Seriola	la	>	ı	i	3.2	0.0	0.0
STATION	-	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
117.0 117.0 120.0 123.0 123.0 127.0	445.0 550.0 442.0 445.0 550.0	000	0.00	000000	0000000	+ 1 + 1 1 1 1 1	0000000	3.5 6.8 7.0 78.5 53.6 100.4 13.2			0.00	0000000	0000000

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90.0	100010000000001110	14.5	111.7 18.22 19.00 19.00 19.00 19.00 19.00 19.00 19.00	25.4 129.6 213.9 0.0 0.0 0.0 35.2 36.0 102.6		11 0000 0000 0000 0000 0000 0000 0000		41	0000000	1 1	0.0
0.0 65.0	1000100000000001110	41111111111111111		1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		1 0000000000000000000000000000000000000		1000100000010		1 1	
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0.0 90.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0100000000001110	11111111111111		13. 76. 00. 00. 1.		00/800000000000000000000000000000000000	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0100000010		ŧ	
0.0 100.0 3.0 28.0 3.0 38.0 3.0 40.0 3.0 45.0 3.0 55.0 3.0 55.0 3.0 55.0 3.0 100.0 3.0 120.0 3.0 140.0 7.0 29.0 7.0 35.0 7.0 45.0 7.0 55.0 7.0 55.0 7.0 55.0 7.0 55.0	10000000001110		000000000000000000000000000000000000000	112000000000011	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	078000000000000000000000000000000000000	1111111111111	100000010		1	
3.0 28.0 3.0 30.0 3.0 46.0 3.0 45.0 3.0 55.0 3.0 50.0 3.0 50.0 3.0 120.0 3.0 120.0 3.0 120.0 3.0 120.0 3.0 140.0 7.0 32.0 7.0 32.0 7.0 40.0 7.0 55.0 7.0 55.0	00000000001110		000000000000000000000000000000000000000	1 1 26 0 6 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		078000000000000000000000000000000000000	111111111111	0 0 0 0 0 0 0 0 0 0		1	
33.0 30.0 0.0 0.3 0.0 46.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0000000001110	13111111111	000000000000000000000000000000000000000	1 1 2 6 0 6 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		000000000000000000000000000000000000000	111111111111	444691		ı	
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3.0 40.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	000000001110		000000000000000000000000000000000000000	1 1 2000 0000	1111111111	00000000000	1111111111	20001	b	1	
3.0 45.0 3.0 55.0 3.0 55.0 3.0 56.0 3.0 70.0 3.0 120.0 3.0 120.0 7.0 29.0 7.0 30.0 7.0 35.0 7.0 40.0 7.0 55.0 7.0 55.0 0.0	00000001110		000000000000000000000000000000000000000	1 1 2 6 0 6 5 0 0 0		0000000000	11111111	, m m c		1	
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3.0 55.0 0.0 3.0 55.0 0.0 3.0 60.0 0.0 3.0 120.0 0.0 3.0 120.0 0.0 3.0 140.0 0.0 7.0 35.0 0.0 7.0 45.0 0.0 7.0 55.0 0.0	0000001110			1 2 6 0 6 5 0		00000000		ه ۱ د		i	
3.0 55.0 3.0 60.0 3.0 70.0 3.0 10.0 3.0 120.0 3.0 120.0 7.0 29.0 7.0 32.0 7.0 35.0 7.0 40.0 7.0 55.0 7.0 55.0 7.0 55.0 0.0	008001110	1111111	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 2 6 0 6 5	1111111	0.000000	111111		0	ı	
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0 32.0	0.0	0.0	1	0.0	1 0 0	0.0 reidae	0.0	1	0.0	0.0	í	3.2
STATION	JAN.	FEB.	MAR.	APR.			JULY	AUG.	SEP.	OCT.	NOV.	DEC.
0 30.0 0 32.0 0 36.0 0 33.0	0000	0.00	0.0	0000		00000	123.5		25.50	0.0	0.0	0000
TATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
0 33.0 0 40.0 40.0	000	0.0	0.0	0000		0000	0 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 1 1 1	00001	0.0	0.0	0000
		1		5	GILETIA	nigricans	ıns					
STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JOLY	AUG.	SEP.	OCT.	NOV.	DEC.
0 38 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	000000	0000000	111111	000000	0.00	00000	3.00 17.5 4.55	0.011111	000000	000000	0 0 1 1 1 1 1 1 1	000000
				Media	Medialuna ca	californiensi	iensis					
STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
0.00	000000000	0 00000 00	1111111111	000000000	0000001111	0.000	wwwwwwwww	0.00	00000000	000000000	0.00	

	DEC.	0.0		DEC.	0.0		DEC.	,	ı	ı	ı	ı	1	1 1	! 1	l l	ı	ı	ı	1	1 1	1 1	1	ı	ı	ı	ł	1 1	ı	ı	ı	ı	1 1 1	15.4	0.0
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AUG.		1 1
JULY	0.00 0.00	
JUNE	21 22 20 20 20 20 20 20 20 20 20 20 20 20	
MAY	100.0 100.0	1 1
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nt.)	JULY	0.00		JULY	2233033 233033 233033 233033 233033 233033 23303 23
lae (cor	JUNE	0.0	Serranidae	JUNE	
Sciaenidae (cont.	MAY	111	Seri	MAY	000000000000000000000000000000000000000
O3	APR.	000		APR.	110000000000000000000000000000000000000
	MAR.	000		MAR.	0000000
	FEB.	111		FEB.	000 00000000000000000000000000000000000
	JAN.	111	Í	JAN.	000000000000000000000000000000000000000
	NC	22.0 23.0 40.0		N.C	3284448330000000000000000000000000000000
	STATION	137.0 137.0 137.0		STATION	700 700 883 900 883 900 900 900 900 900 900 900 90

TABLE 4. (cont.)

Serranidae (cont.)

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
130.0 35.0			0.0	0.0		2.7	0.0		1 1 1 1 1 1 1 1	3.2	0.0	0.0
30.0 45.	ı	ı	0.0	0.0	1			ŀ	1	9		
33.0 23.	1 1	1 1	0.0	000	1 1			1 1	1 1		0 1	
33.0 40.	1	1	00	0.0	ı			ı	I			0.0
37.0 22.	ł	ı	0.0	0.0	1 1			1 1	l I			
37.0 23.	l 1	1 1	•		1		•	. 1	1		0 (
37.0 35.	1	1	0.0	0.0	ı	0 0		ı	ı			
37.0 40.	ı	1	0.0	0.0	1			ı	1			ı
37.0 50.	ı	1	0.0	0.0	ı			ı	1			ı
					Gemp	Gempylidae						
STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
130.0 45.0			0.0	0.0	 	0.0	0.0	í	1	3.3	0.0	1
					Scon	Scombridae						
STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
100.0 35.0 130.0 28.0	0.0	0.0	0.0	0.0	1 1	3.4	0.0	1 1	0.0	0.0	2.3	0.0
					Auxi	s spp.						
H	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
123.0 60.0 137.0 35.0		1 1	0.0	2.8	1 1	0.0	0.0	1 1	0.0	3.5	0.0	0.0
					Sarda chiliensis	hiliens	is					1
STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
90.0 28.0 93.0 28.0 97.0 29.0 97.0 30.0 100.0 35.0 117.0 40.0	00000000	00000000	1 4 1 1 1 1 1 1 1	00000000	0001111111	0.0000000000000000000000000000000000000	33.33 33.22 34.44 13.75 10.00 14.11	11111111	000000000	000000000000000000000000000000000000000	0.00	00000000

	DEC.	000000000000000000000000000000000000000	DEC.	000000000000000000000000000000000000000
	NOV.	000000000000000000000000000000000000000	NOV.	1 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	OCT.	000 00000000	OCT.	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
	SEP.	00000000111111111	SEP.	23.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
	AUG.		AUG.	
cont.)	JULY	10.1 10.1 10.1 10.1 10.1 10.1 10.0 11.0 11.0 11.0 11.0 11.0 11.0 11.0 11.0 11.0 11.0 11.0 10.0 1	JULY	0.00
nsis (JUNE	121.0 13.3 13.3 0.0 13.3 86.1 86.1 131.0 131.0 6.5 7.6 0.0 10.0 128.8 5.7 6.0	JUNE	20.0 0.00 0.00 0.00 30.44 0.00 0.00 0.00
Sarda chiliensis	MAY	Scomber	MAY	0000
Sarda	APR.	0.000000000000000000000000000000000000	APR.	000000000000000000000000000000000000000
	MAR.	110000000000000	MAR.	000000
	FEB.	00	FEB.	
	JAN.	0000001111111111	JAN	000000000000000000000000000000000000000
		80000000000000000000000000000000000000		222.0 23.0 33.0 33.0 33.0 33.0 33.0 33.0
	STATION		STATION	77-00-00-00-00-00-00-00-00-00-00-00-00-0

STATION JAN. FEB. MAR. APR	AN. FEB. MAR.	MAR.	R	AP	æ	MAY	Trichiuridae 	 JULY	AUG.	SEP.	OCT.	NOV.	DBC.
JAN. FEB. MAR.	AN. FEB. MAK	MAK	z i	i	AFK.	MAX	CONE	100r	AUG.	ı i	CI.	NOV.	UEX-
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0.0 0.0 0.0	0.0	0.	ı			1			ı		ı		0.0
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STATION JAN. FEB. MAR.	. FEB. MAR	. MAR	24		APR.	MAY	JUNE	JULY	AUG.	SED.	OCT.	NOV.	DEC.
33.0 0.0 0.0	0.0 0.	0.	ı				1		1			1	
0.0 0.0 0.8	0.0	0.	i			0.0	1		ı			ı	
7.0 0.0 0.0	0.0	0.	1		. 0		ı		í			1	
0.0 0.0 0.0	0.0	0.	ı						1			ı	
0.0 0.0 0.6	0.0	0.	ı			ı			ı			ı	
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2.0 0.0 0.0	0.0	0.	ı			I			ı			1	
0.0	0.0	٥	1			1 1			1 -	0.0		1 1	0
		, c	1 1		٠	1 1			1 1			1	
35.0 0.0 0.0	0.0				000	1	00	5.4	1		0.0	1	0.0
2.0 - 0.	.0	.0				1			ı	0.0			
3.0	- 0	0				ı			1	ı	۵°	0.0	
2.0 $0.$	- 0	0				ı			ı	ı			0

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100.00 10.00	2.00 2.10 2.10 2.10 2.10 2.10 2.10 2.10	100.00 2.26 2.27 2.20 2.28 2.20 2.20	50	1 .			! ! ! !			1	ı	i	1	1	ı
100.00	190.0 2.8 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1	100.00 10.10	006		i	ı	ŀ	1	ı	ĺ	ı	ı	ı	ı	1
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TABLE 4. (cont.)

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	DEC.	000000		DEC.	
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	OCT.	0.00		OCT.	10000000000000000000000000000000000000
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simillimus	JUNE	200000 0000000000000000000000000000000	rus cuvi	JUNE	000000000000000000000000000000000000000
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Peprilus	APR.	0.0000000000000000000000000000000000000	Tet	APR.	
	MAR.	000370		MAR.	0.
	FEB.	11111		FEB.	
	JAN.	0.00		JAN.	
	NC	35.0 40.0 34.0 28.0 22.0		NC	55.0 50.0 50.0 50.0 50.0 60.0
	H	120.0 120.0 127.0 130.0 133.0		STATION	883.0 882.0 882.0 883.0 883.0 990.0 990.0 993.0 100.0 100.0 100.0 100.0 1003.0 1003.0 1003.0 1003.0

					Tetragonurus		cuvieri	(cont	•)				
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	DEC.	120000000000000000000000000000000000000		1	
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	OCT.	101 100 000 000 000 000 000 000 000 000		000000000000000000000000000000000000000	0.0 0.0 0.0 0.0 13.4 15.0
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	STATION	103.0 103.0 103.0 103.0 107.0 107.0 110.0 110.0 1113.0 117.0 120.0		633. 880. 882. 883.	103.0 117.0 117.0 117.0 117.0 117.0 118.0 119.0 120.0

TABLE 4. (cont.)

DEC.	000000000000000000000000000000000000000	DEC.	700000000000000000000000000000000000000
NOV.	1 H	NOV.	
ocT.	000000000000000000000000000000000000000	OCT.	00000000000000000000000000000000000000
SEP.	0.0000000000000000000000000000000000000	SEP.	111111111111111111111111111111111111111
AUG.		AUG.	000040000111111111111
JULY	0.0 5.0 0.0 7.5 0.0 0.0 0.0 3.8 0.0 17.6 0.0 3.4 2.5 0.0 3.0 0.0 0.0 3.4 3.8 0.0	JULY	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
STOMBIA		JUNE	0.000
OSSINA	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	MAY	000000000000000111111
APR. MAY	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	APR.	
MAR.	T.000000000000000000000000000000000000	MAR.	
FEB.	0.01111111111111111	FEB.	2
JAN.	0000111111111111111	JAN.	
NO	0.000 0.000	NO	500 500 500 500 500 500 500 500
TAT	120.0 120.0 120.0 127.0 127.0 130.0 133.0 133.0 133.0	STATIO	63.0 770.0 777.0 777.0 880.0 883.0 883.0 990.0 990.0 993.0 993.0 97.0 97.0

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DEC.	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	1	DEC.	22200000000000000000000000000000000000
NOV.	0.0000		NOV.	NOV. NOV.
OCT.	000000000000000000000000000000000000000		ocr.	10000 10000
SEP	0.00000000111		SEP.	SET.
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MAR.	0.0000		MAR.	MAAR.
FEB.	115.4 29.2 29.2 61.4 61.4 0.0 0.0	 	FEB.	EEB.
JAN.	0000000001111		-	AAII.
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TABLE 4. (cont.)

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tulata JULY AUG. SEP 0.0 - 6.0 0.0 - 6.0 0.0 - 0.0 0.0 - 0.0	tulata JULY AUG. SEP 0.0 0.0 0.0 2.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	tulata JULY AUG. SEP 0.0 0.0 0.0 2.5 - 0.0 - 0	tulata JULY AUG. SEP 0.0 0.0 0.0 2.5 - 0.0 - 0
guttulata JULY - 0.0 0.0 0.0 0.0 0.0 0.0 0.0	guttulata JULY AU 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	guttulata JULY AU 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	JUNE JULY AU 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
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JUNE JULY AUG. SEP	JULY AUG. SEP. 0.0 3.1	JULY AUG. SEP.	JULY AUG. SEP.
JUNE JULY AUG. SEP - 0.0 0.0 - exilis	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	00.00 00
JUNE JULY AUG. SEP - 0.0 0.0 - exilis JULY AUG. SEP	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00	0.00 0.00
JUNE JULY AUG. SEP - 0.0 0.0 - - exilis JULY AUG. SEP	0.0 6.9 9.0 0.0 0.0 0.0 0.0 0.0 1.9 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	0.0 6.9 9.3 9.3 9.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	00.0 40.0 00.0
OUNE JULY AUG. SEP - 0.0 0.0 exilis JULY AUG. SEP - 0.0 3.1 0.0 3.1 0.0 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	000 000 000 000 000 000 000 000 000 00	00000000000000000000000000000000000000
OUNE JULY AUG. SEP - 0.0 0.0 exilis JULY AUG. SEP - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 0.0 3.1 - 0.0 0.0 3.1 - 0.0 0.0 3.1 - 0.0 0.0 3.1 - 0.0 0.0 3.1 - 0.0 0.0 3.1 - 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	4.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	4.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	4.8 0.0 0.0 0.0 3.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
JUNE JULY AUG. SEP - 0.0 0.0 EX! 1 is JUNE JULY AUG. SEP - 0.0 3.1 - 9.0 0.0 - 0.0 3.1 - 6.9 3.3 - 6.9 3.3 - 6.9 0.0 - 6.9 3.3 - 6.9 0.0	0.0 3.5 3.9 0.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	4.0 3.5 3.9 0.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	4.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
### PAUS SEP SEP	3.9 0.0 - 0.0 0.0 - 0.0	3.9 0.0 - 0.0 0.0 - 0.0 0.0 - 0.0 0.0 2.9 - 0.0	3.9 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
OUNE JULY AUG. SEP - 0.0 0.0 - 0.0 0.0 JULY AUG. SEP - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 14.8 0.0 - 0.0 0.0 - 0.0 0.0 - 0.0 0.0 - 0.0 0.0 - 0.0 0.0 - 0.0 0.0 3.5	0.0 - 0.0 0.0	3.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0	
JUNE JULY AUG. SEP - 0.0 0.0 - 0.0 0.0 JUNE JULY AUG. SEP - 0.0 3.1 - 0.0 3.1 - 0.0 3.1 - 0.0 0.0 - 14.8 0.0 - 0.0 0.0 - 0.0 0.0 - 0.0 0.0 - 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		.0 2.9 - 0.	.0 0.0 0.0

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	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
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	0.0	1.6	ı	ı	6.7	ı	0.0	10	ı	0.0	0.0	ı
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TABLE 4. (cont.)

DEC.	00 0000000000	DEC.	1111111
NOV.		NOV.	11111000
OCT.		OCT.	0000
SEP.	000000000000000000000000000000000000000	SEP.	111111
AUG.	momoooooooooooo	AUG.	0.000
JULY	0 m 0 m 4 d 0 0 0 0 0 m m 0 0 0 0 0 m 4 d 0 m 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	JULY	0000
JUNE		JUNE	
MAY	2.9 0.0 0.0 10.6 10.6 4.8 4.1 4.1 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	MAY	22.1
APR. MAY JUNE		APR.	
MAR.	1111111111111111111	MAR.	111111
FEB.		FEB.	7.7 46.6 79.8 6.8 396.0 217.5
JAN.		JAN.	8.6 - 7.8 11.1
NO	88888888888888888888888888888888888888	Z	\$2.0 \$2.0 \$2.0 \$2.0 \$5.0 \$5.0
STATIO	70.0 70.0 70.0 70.0 70.0 73.0 73.0 73.0	STATION	0.0000000000000000000000000000000000000

! ! !	DEC.	00000000000000000000000000000000000000
	NOV.	
	OCT.	
	SEP.	
	AUG.	000000000000000000000000000000000000000
(cont.	JULY	
vetulus	JUNE	
	MAY	00000400004000000000000000000000000000
Parophrys	APR.	0.000000000000000000000000000000000000
	MAR.	11:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1
	FEB.	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	JAN.	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	Z	0.000000000000000000000000000000000000
	STATION	60.00 60.00

TABLE 4. (cont.)

	DEC.	i		DEC.	DBC 000000000000000000000000000000000000	DEC.	0.0
	NOV.	0.0		NOV.	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO	NOV.	
	OCT.	0.0		OCT.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OCT.	0000
	SEP.	ı		SEP.	SET 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SEP.	2.1
	AUG.	0.0		AUG.	AUG. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	AUG.	1111
spp.	JULY	0.0	snsou	JULY	7.0 0.0 0.0 0.0 0.0 0.0 0.0 3.7 0.0 3.7 3.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	JULY	0000
	JUNE	ı	hys coe	JUNE	10.0 3.0 3.0 0.0 0.0 0.0	i 55	0.00
Pleuronichthys	MAY	0.0	Pleuronichthys coenosus	MAY	Dienstein Propriet Pr	MAY	
PJ	APR.		Pleu	APR.	Pleur Pleur APR.	APR.	0000
	MAR.			MAR.	MAR.	MAR.	1111
	FEB.	1.4		FEB.	00000000000000000000000000000000000000	FEB.	0000
	JAN.	0.0		JAN.	NAN	JAN.	0000
	Z	52.0			Z 2000 200		29.0 30.0
	TAT	63.0		STATION	73.0 882.0 883.0 883.0 883.0 883.0 87.0 90.0 90.0 90.0 1127.0 47.0 60.0 63.0 63.0 73.0 80.0	STATION	97.0

TABLE 4. (cont.)

	DEC.	22.9	! ! !	DEC.	1 1	1 1	ı	ı	1 1	ı	ı	1 1															0.0	0						•	
	NOV.	0.0		NOV.	1.8	8								1	ı	ı	١	í	l I	ı	ı	1 1	: 1	ı	ł	ı	1 1	ı	1 1	ı	ł		0.0		
	OCT.	0.0		OCT.	0.0													8											0 1	1 1			ı	ll	
	SEP.	0.0		SEP.	1 1	H	1	ı	1 1	ı	ı	i		0 0					0 0	0		0.0	0 (0					0 -				200		
(:)	AUG.	1 1 1		AUG.	0.0									1	ı	ı	ı	l	H	ı	ı	1	1 1	1	ı	ı	1 1	l	1 1	ŀ	ı	ı	1	1 1	
i (cont.	JULY	0.0 2.1 0.0	verticalis	JULY	0.0								•										•												
ritteri	JUNE	0.0		JUNE				1	1 1	1	ı	ı	I 1	l I	1	1	1	ı						• •			6.0	0	•		6 6				
chthys	MAY	 	Pleuronichthys	MAY	0.0																ı	1	1 1	ı	ı	ı	1	ŀ	1 1	ı	ı	ı	ı	1 1	l
Pleuronichthys	APR.	0.00		Pleur	APR.		1	1 1	ı	0.0												8			0 0						6				
Ъ	MAR.	0.0		MAR.		1	1 1	ı	1 1	1	ı	ı	t		ı	0.0	ı	ı	1 1	1	ı	1	1 1	1	í	ı	ı	ı	1 1	1	ı	ı		0.0	
	FEB.	0.0		FEB.	0.0					·		0.0			0 (0 0	7.			0 0		0					0 (ı	I
	JAN.	0.0		JAN.	5.6					0 0	0		0		9 (0 0			0	0 0				0 1			0				0 (ı	ı
	N.	25.0 40.0 23.0		N.C	50.0	8	າດ	 	٠. د	7:	0	ش	٠, د	, c		. 0	7.	<u>.</u>	ا		0	2	ۍ د •	٠,٠	0	6	1.	7	'nc	5 u	9	5	9	7:	'n
	STATION	120.0 120.0 137.0		STATION	63.0	1	5 ~	, ,	0	200	3	8	٠ د د	;		. 0	3	ش			7	97.	900		00	03.	7:		10.	- 21	20.	20.	23.	23.	. 17

TABLE 4. (cont.)

	DEC.	0.0		DEC.	0.00		DEC.	
	NOV.	0.0		NOV.	10000011		NOV	00m000000000011111111
	OCT.	0.0		OCT.	00000000		OCT.	
	SEP.	1 1		SEP.	0.00		SEP.	0.00 0.00 0.00 0.00 0.00 0.00
(cont.)	AUG.	1 1	S	AUG.	170.0		AUG.	00000 mm m m m m m m m m m m m m m m m
	JULY	0.0	melanostictus	JULY	00040000	.d	JULY	000000000000000000000000000000000000000
verticalis	JUNE	0.0	melanc	JUNE		irus spp	JUNE	00000
	MAY	1 1	Psettichthys	MAY	000000000000000000000000000000000000000	Symphurus	MAY	000000000000000000000000000000000000000
Pleuronichthys	APR.	2.6	Psett.	APR.	 		APR.	
PI	MAR.	0.0		MAR.			MAR.	
	FEB.	1 1		FEB.	0.00		FEB.	000000 00000000000000000000000000000000
	JAN.			JAN.	0.0000000000000000000000000000000000000		JAN.	000000000000000000000000000000000000000
	N.	25.0		N.	50.0 52.0 50.0 52.0 64.0 60.0 50.0		N.	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
	STATION	133.0			60.0 63.0 63.0 63.0 82.0 83.0 87.0		STATION	677.00 677.00 773.00 8833.00 80 80 80 80 80 80 80 80 80 80 80 80 8

	DEC.	a l	1111
	NOV.	0.000000000000000000000000000000000000	1 1 1 1
	OCT.	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	1 1 1 1
	SEP.	SEP. SEP.	1 1 1 !
	AUG.	Aug.	1 1 1
(cont.)	JULY	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	1 1 1
spp. (c	JUNE	ed fish	1 1 1
Symphurus	MAY	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1 1 1
	APR.	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	1-1-1
	MAR.	MAR.	1 1 1
	FEB.	HEB	1 1 1
	JAN.	1 AAN.	
	Z	N4RW42W42V44RW4W4M44W4W2W N2RW000000000000000000000000000000000000	0000
	STATION	1000 1003 1003 1003 1003 1003 1003 1003	0000

TABLE 4. (cont.)

Disintegrated fish larva (cont.)

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Disintegrated fish larva (cont.)

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TABLE 4. (cont.)

fish larva (cont.)

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Unidentified fish larva (cont.)

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TABLE 4. (cont.)

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Summary of pooled occurrences of all larval fish taxa taken on CalCOFI surveys from 1961 to 1969. Taxa are listed in the same order as Table 4. TABLE 5.

NAME	1961	1962	1963	1964	1965	1966	1967	1968	1969	
Anguilliformes Etrumeus acuminatus	7	8	20	37	24 35	17	5	n 3	13	
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ប្ត			2.0			8	9 0	35	215	
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Bathylagus pacificus	-	4	4	2) (C	N G		912	σ	
batugiagus Wesetui Leuroalossus stilbius	202	225	236		300	449	4 . w	116	498	
Dolichopteryx spp.	1	i		·		1		1	Т	
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Ichthuococcus spp.	4	\neg	\neg	\neg	7	ϵ			3	
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Vinciguerria poweriae	m	7	m r	4	m	9	1	١	П	
Woodsia nonsuchae			- 4			u			-	
Sternoptycnidae	40	7	40 1	7 1	ט ו	007	07	0 1	409	
Chan I fodus macouni							6	46	8	
Idiacanthus antrostomus	48		26	32	33	7	15	22	114	
Aristostomias scintillans	6	10	6.	9	6		2	L	ĬÏ	
Bathophilus spp.	S,		4	m,	4	2	2	-	7	
Eustomias Spp.	7	⊣ ~	10	7	ع ب	1 47	1 1	⊣ I	li	
Tactostoma macronus	7	₹	1	≀ ব	2 (m	1	4	
Stomias atriventer	58	76	86	81	100	326	24	46	214	
Evermannellidae	1	m	٦		-	1	ı	1 (1 1	
Paralepididae				10	m į				- 0	
Lestidiops ringens	20	80	80 0		67	232	36 2	52 8	231	
Daralonic atlantica	1)	- 1) <u>-</u>		1)	1	
Stemonosudis macrura	4	9	ı	2	19	5	1	1	1	
	2	4	1	2	4	1	ı	1	1	
Aulopus spp.	ı		1		l		ı	i		
Scopelosaurus spp.	16	10	ω ς	16	19	21	9 0	m c	36	
scopetarchidae			000		cc		67	CT		

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NAME	1961	1962	1963	1964	1965	1966	1967	1968	1969
Myctophidae Ceratoscopelus townsendi Diaphus spp. Lampadena urophaos Lampanyctus spp. Lampanyctus regalis Lampanyctus ritteri Lampanyctus ritteri Notolychus raldiviae Notoscopelus resplendens Parvilux ingens Stenobrachius leucopsarus Triphoturus mexicanus Triphoturus nigrescens Benthosema pterota Centrobranchus spp. Diogenichthys spp.	165 149 77 148 154 177 177 107 105	3524EHOH4 72 H95	179 128 128 120 120 50 186 451 451	220 146 101 255 125 189 342 448 448	2222 156 80 80 183 234 24 44 44 44 11	346 387 187 401 401 523 54 420 990 165	33 37 46 10 67 67 11 11 142 163 163 18	79 233 34 11 72 127 127 92 13	329 1153 110 23 550 10 10 29 29 556 566 29 29 29 29 29 29 29 29 20 20 20 20 20 20 20 20 20 20 20 20 20
Diogenicating deternates Diogenicating deternates Rectrona rissoi Gonicating tenuiculus Hygophum atratum Hygophum reinhardtii Loweina rara Myctophum nitidulum Protomyctophum crockeri	9 2 2 2 44		161 29 29 41 27 22 31 225	0 4 40 EP	61 2018	7 4 7	63 16 21 7 7 11 109	32 12 12 6 6 139	4 4 484464
Protomyctophum thompsons Symbolophorus californiensis Tarletonbeania crenularis Synodus spp. Bregmaceros spp. Microgadus proximus Merluccius productus Physiculus spp. Macrouridae Ophidiiformes Brosmophycis marginata	82 160 19 152 - 16	140 115 23 2 2 8 1 6	78 111 41 229 1 6	1116 135 35 290 1 1 49	111 132 42 42 290 33 37	291 208 121 2 398 2 5 69	38 10 23 - - 25 1 10 5	61 73 95 - 3 16	
Carapidae Chilara taylori Ophidion scrippsae Porichthys spp. Ceratioidei Gobiesocidae Exocoetidae Hemiramphidae Cololabis saira Atherinidae Trachipteridae Eutaenlophoridae	12 12 13 3 2 11 11	31 10 10 26 	115 61 17 17 13 13 20	11 19 19 7 7 8 8 8 22 22 22 22	22 40 18 19 19	55 67 67 12 12 10 11 11 75	15.	10 10 10 10	32 32 34 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9

61 51 138 248 12 705 47 19 1969 1968 207 207 14 100 119 119 115 141148 1967 77 51 198 3 105 30 503 1966 1 62 698 87 87 25 25 387 20 30 73 64 104 1965 16 492 20 15 669 699 80 118 115 1964 1963 12 12 17 289 17 40 1 14 68 31 87 1962 1961 Scorpaenichthys marmoratus Medialuna californiensis Scopelogadus bispinosus Macroramphosus gracilis Chaetodipterus zonatus Scopeloberyx robustus Trachurus symmetricus Caulolatilus princeps Semicossyphus pulcher costeus aenigmaticus Oxyjulis californica Chromis punctipinnis Hypsypops rubicundus Coryphaena hippurus Caristius macropus Anoplopoma fimbria Ophiodon elongatus Hypsoblennius spp. Girella nigricans Oxylebius pictus Sebastolobus spp Halichoeres spp. Seriola lalandi Howella brodiei Zaniolepis spp. Melamphaes spp Syngnathus spp Prionotus spp. Scorpaena spp. Poromitra spp. Hexagrammidae Cyclopteridae Sebastes spp. Pomacentridae Scorpaenidae Acanthuridae Blennioidei Apogonidae **Jaemulidae** fugil spp. Brama spp. Carangidae Gerreidae Sobiidae Labridae Agonidae Cottidae

TABLE 5. (cont.)

1969 195 72 101 42 13 13 17 20 20 21 17 21 18 18 14 74 1968 108 19 12 13 1967 5590 171 83 81 33 36 36 72 72 80 80 111 111 111 113 29 68 3 74 31 131 131 52 74 60 342 65 65 107 107 107 110 88 81 88 88 88 88 1965 243 73 42 96 1963 1962 186 50 24 21 184 1961 Psettichthys melanostictus Pleuronichthys verticalis Paralichthys californicus Disintegrated fish larva Unidentified fish larva Pleuronichthys decurrens Bothus spp. Citharichthys spp. Citharichthys stigmaeus Xystreurys liolepis Glyptocephalus zachirus Pleuronichthys coenosus Lepidopsetta bilineata Pleuronichthys ritteri Lyopsetta exilis Microstomus pacificus Platichthys stellatus Hippoglossina stomata Hypsopsetta guttulata *Cichthys lockingtoni* Peprilus simillimus Tetragonurus cuvieri Chiasmodontidae Pleuronichthys spp. Trichiuridae Sphyraena argentea Scomberomorus spp. Parophrys vetulus Pleuronectiformes Scomber japonicus Sarda chiliensis Tetraodontidae Symphurus spp. Syacium ovale Polynemidae Scombridae Sciaenidae Serranidae Sempylidae Auxis spp. Soleidae Sparidae Nome i dae NAME

TABLE 5. (cont.)

TABLE 6. List of stations which were occupied twice in one month during 1969.

Sta	tion	Month
63.0	50.0	2
63.0	52.0	2
63.0	55.0	2
67.0	48.0	2
67.0	50.0	2
67.0	55.0	2
67.0	60.0	2
67.0	65.0	2
67.0	70.0	2
67.0	80.0	2
67.0	90.0	2
70.0	51.0	2
70.0	53.0	2
70.0	60.0	2
70.0	65.0	2
70.0	70.0	2
70.0	90.0	2
70.0	100.0	2
73.0	50.0	2
73.0	53.0	2
73.0	60.0	2
73.0	65.0	2
73.0	70.0	2
73.0	80.0	2
73.0	90.0	2
77.0	48.0	2
77.0	51.0	2
77.0	55.0	2
-77.0	60.0	2
77.0	65.0	2
77.0	70.0	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
77.0	80.0	2
77.0	90.0	2
120.0	45.0	3
120.0	70.0	
107.0	31.0	10

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